OCTOBER 16, 1961

PAPER TRADE JOURNAL

In the Lighter Vein: The World's Only Wind Powered Paper Mill

Progress Report on "Verti-Forma" Revolutionary Type Paper Machine

Deinkers Converge on Kalamazoo For Their Sixth Annual Conclave

Which Do We Know More About: Outer Space or Press Dynamics

Contents of the Week, pages 4-5

University Microfilms, Inc.
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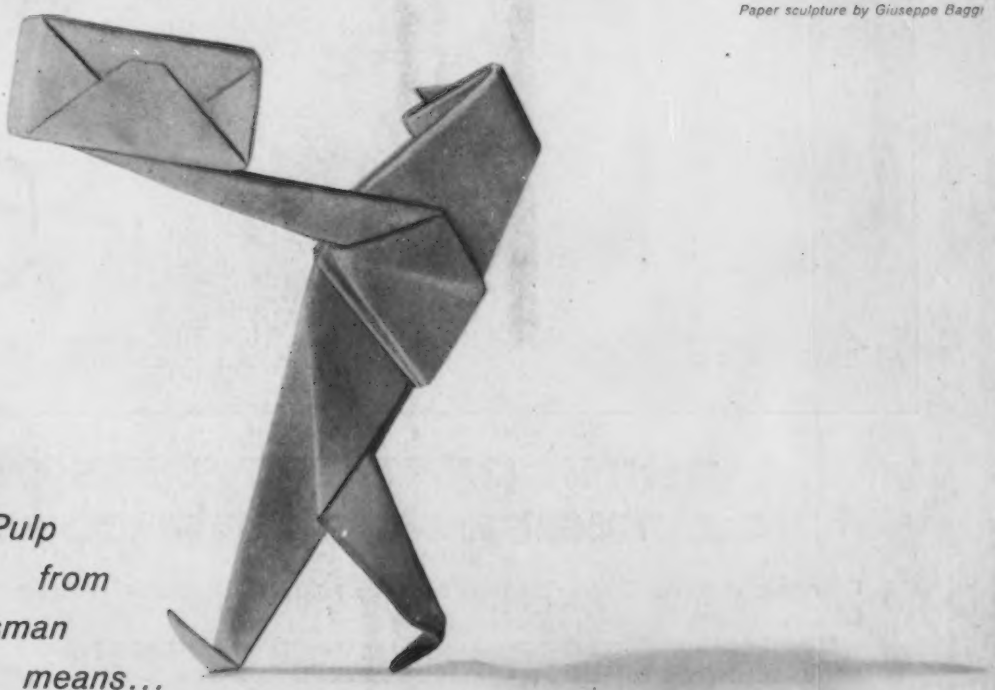
Ann Arbor, Mich.



Paper sculpture by Giuseppe Baggi

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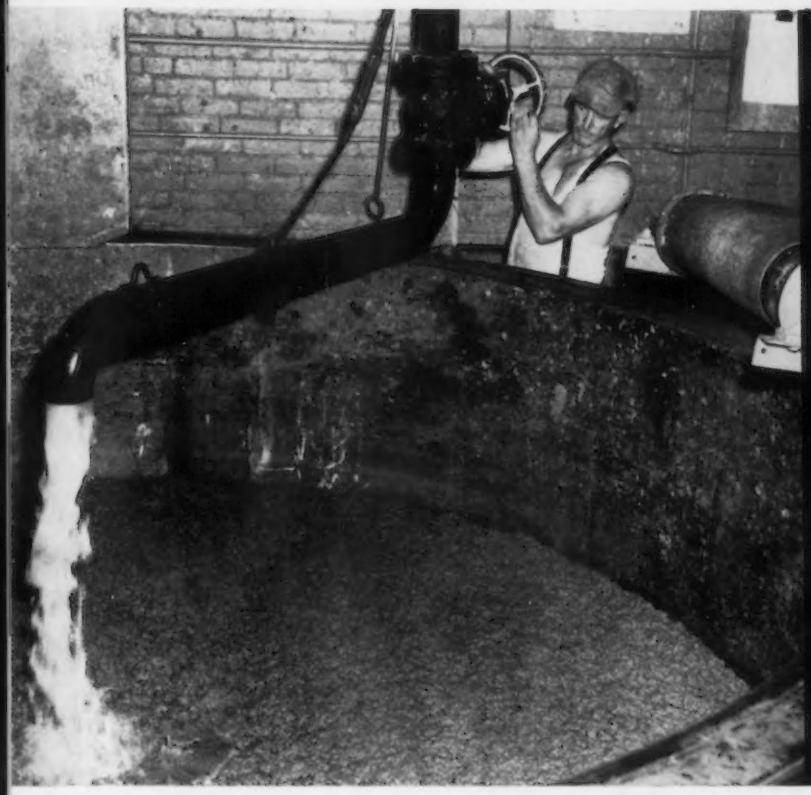
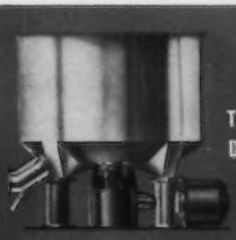
"The Emerson Dualator does the best defibering job of any equipment we know about"

says **David W. Peat**, Manager of Manufacturing of the Gilman Paper Company, Gilman, Vermont.





The Emerson Dualator

. . . employs contra-rotating rotors which form a cylindrical zone of positive defibering action

. . . and develops a distinctive radial stock flow.

NEW EMERSON DUALATOR REDUCES DEFIBERING TIME AND ENERGY INPUT AT GILMAN

"Following our search for a pulper that could defiber hard-sized and wet strength broke effectively with minimum use of heat and chemicals," continued Mr. Peat, "we chose the Emerson Dualator. A full year of continuous operation proves it does the job better and faster than previous methods with far less power per ton of throughput."

Small wonder at Gilman's enthusiasm! Based upon an entirely new defibering concept, the Dualator is the most advanced pulper ever developed.

Utilizing two bottom rotors operating in opposite directions on the same axis, a cylindrically shaped defibering zone is defined by the narrow clearance between the inner and outer rotor vanes. Stock is directed from the inner rotor into the path of the outer rotor vanes. This abrupt reversal in direction, at an interfacial speed of 6,000 fpm, produces tremendous hydraulic shear forces that literally rip the stock to shreds, with no sacrifice in fiber length.

The revolutionary design of the new Emerson Dualator reduces the defibering time and energy input of conventional pulpers by at least one half. With contra-rotating rotors, energy is converted to productive pulping. None is wasted in needless circulation. This means more tons/day of complete, efficient defibering. It permits the use of smaller tubs and, in many instances, reduces or eliminates the necessity of using chemicals and/or heat. A distinctive radial flow pattern develops from the interaction of the two rotors, which permits operation at as little as 25% of tub capacity with no splashing.

Your mill can benefit from owning an Emerson Dualator as has the Gilman Paper Company. For complete information, write The Emerson Manufacturing Co., Division of John W. Bolton & Sons, Inc., Lawrence, Massachusetts.

BOLTON EMERSON

TRADE MARK

PAPER TRADE JOURNAL

PUBLISHED WEEKLY SINCE 1872

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FEATURED THIS WEEK

270 Year Old Papermill Powered by Wind and Gas

Unique Dutch mill still operates with many items of the original equipment. An on-the-spot and into-the-canal report by our European editor—Ernest F. Barker **34**

Press Felts and Water Removal— Part 1. Dynamics of Water Removal

There is, perhaps, a better fundamental understanding of events in outer space than of the happenings in the press nips of high speed paper machines—Dan B. Wicker **40**

Progress in Development of a New Sheet Forming Method

In this radical new method, known as the Verti-Forma, the sheet is formed between two vertical wires. The originators, Black-Clawson Co., emphasize that this unit is still in development and not available for mill installation—W. S. Corbin **43**

Deinkers Focus a Trouble Light on Problems of Bleaching Reclaimed Stock

"What's new in bleaching of deinked pulps?" might well have been the theme of the sixth annual conference just held in Kalamazoo, Mich.—Harry Dyer **46**

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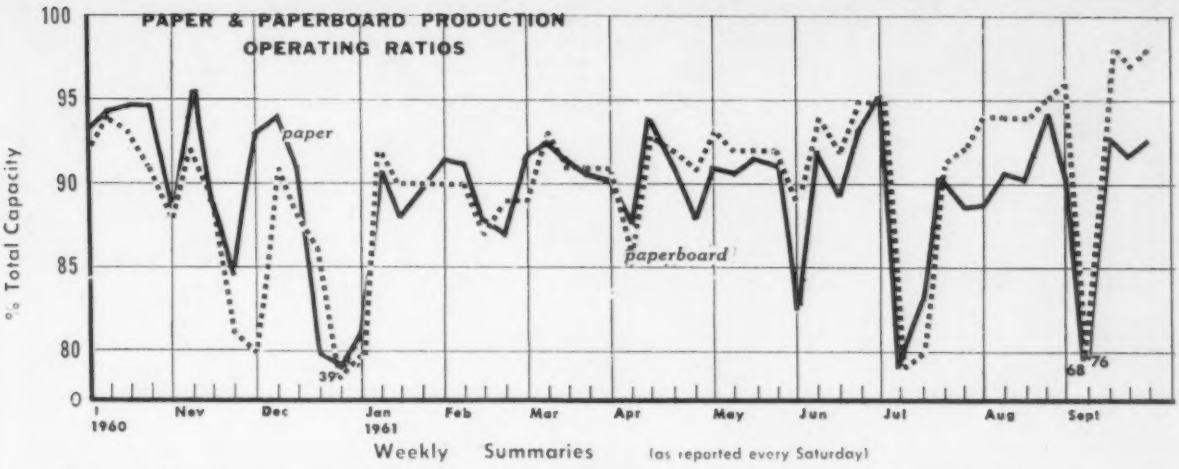

NEWS OF THE WEEK

Columbia Stockholders Warn Against Possible Sale . . . SFI to Build Grocery Bag Plant at Snowflake and Acquire Premier Container . . . Peninsular Paper Co. Announces Major Expansion at Ypsilanti Mill . . . Consolidated Acquires Cleveland Firm . . . . . .

Class Enters I.P.C. Graduate School . . . Brown Names Sales Mgr. For Printing Papers Div. . . . Leopold Chosen as ESPRI Director . . . Hudson Appoints Three at Palatka . . . Lord Elected President of John Carter Co. . . . . . .

Fiber Box Shipments Breaking All Records . . . Tabulating Card Plant Opens in Detroit . . . White To Retire From Container Corp. Post . . . Custom-Made Paper Bag Names Manufacturing Mgr. . . . PSSMA Elects Officers At Annual Meeting . . . . . .

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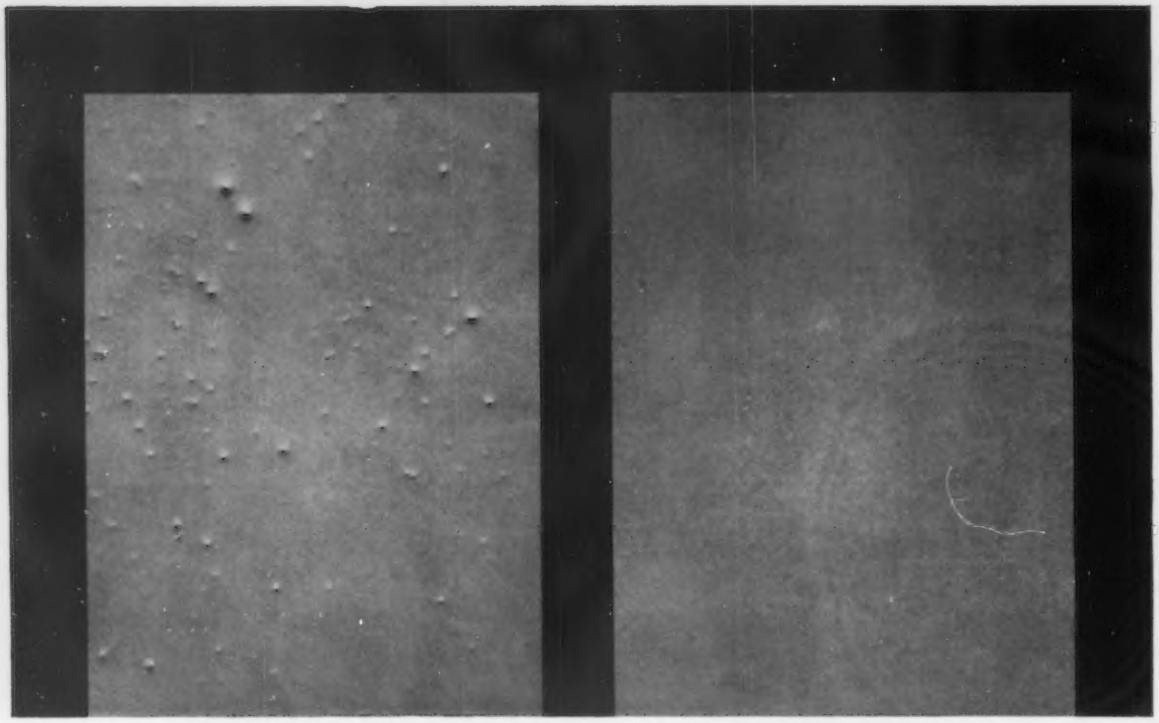
REMEMBER THESE DATES

Engineering Conference, Shoreham Hotel, Washington, D. C.	OCTOBER 16-19
Fall Convention, National Paper Trade Assn., Conrad Hilton Hotel, Chicago, Ill.	OCTOBER 23-25
Alkaline Pulping Conference, Rice Hotel, Houston, Texas	NOVEMBER 1-3



Film of 60% solids dispersion
General Purpose Titanium Dioxide
13X magnification

Film of 60% solids dispersion
TITANOX-A-CG
13X magnification

The right "specs." mean NO SPECKS in paper coatings

Your specifications ("specs.") for coatings can well include TITANOX-A-CG, the Coating Grade anatase titanium dioxide pigment.

Made expressly for paper coatings, this pigment is controlled by rigid specifications that maintain not only whitening, brightening and opacifying power, but also the ease of fine dispersion and the freedom from coarse agglomerates that help banish specks.

For your coatings that must be produced and used with the utmost speed and still yield surfaces of uninterrupted smoothness, let TITANOX-A-CG be your choice in titanium dioxide.

Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; offices and warehouses in principal cities. In Canada: Canadian Titanium Pigments, Ltd., Montreal.

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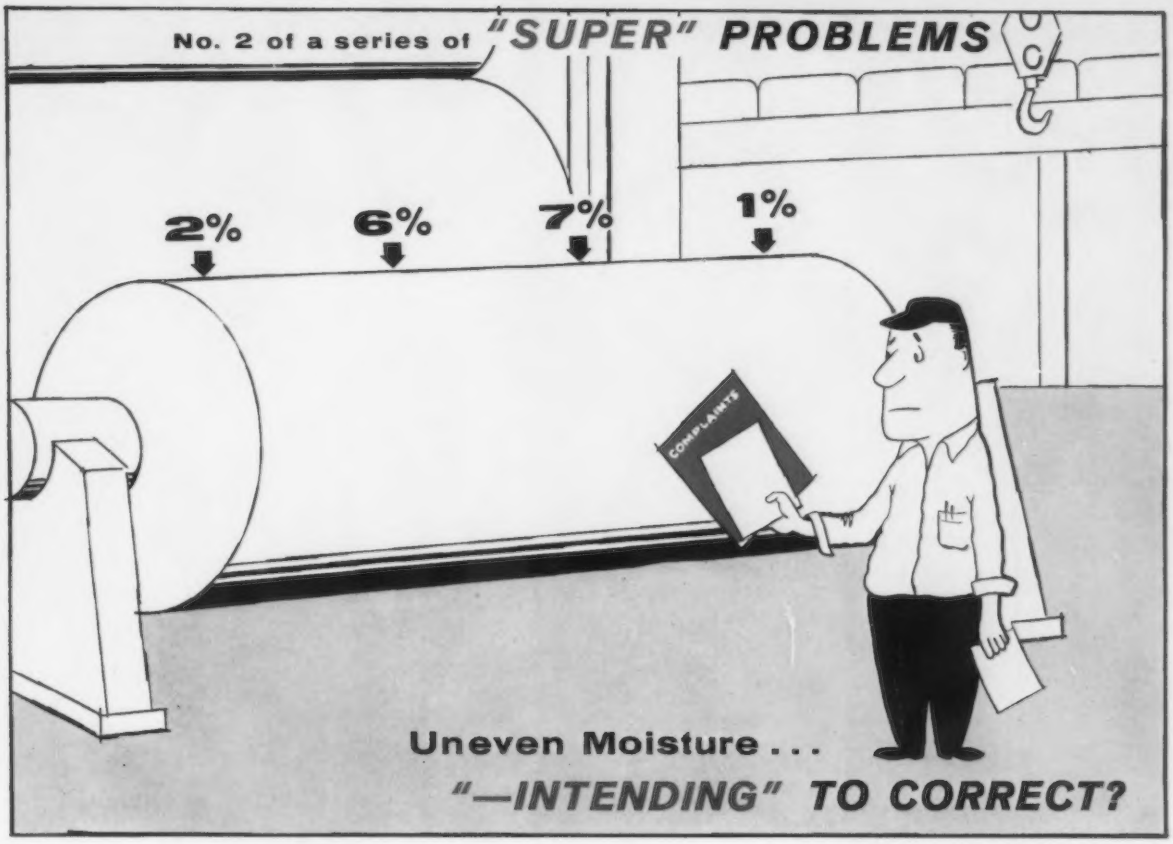
TITANOX

No. 2 of a series of "SUPER" PROBLEMS

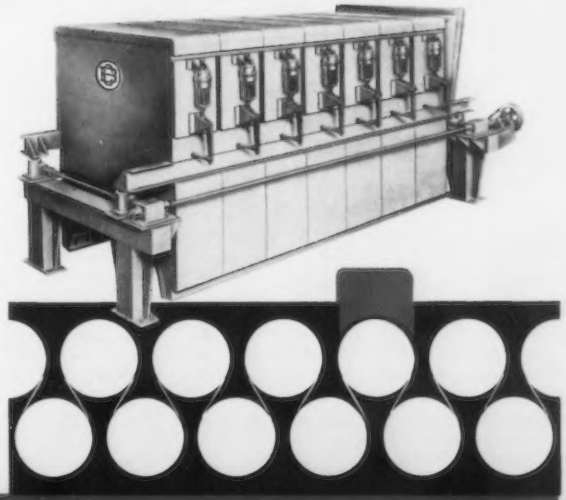


Uneven Moisture . . .
"—INTENDING" TO CORRECT?

Install a 3-D Profiler

- Uniform moisture across face of the sheet
- Increases production by decreasing need for over-drying
- Remote, instantaneous selection
- Immediate retraction on paper breaks
- Returns to exact location after paper break

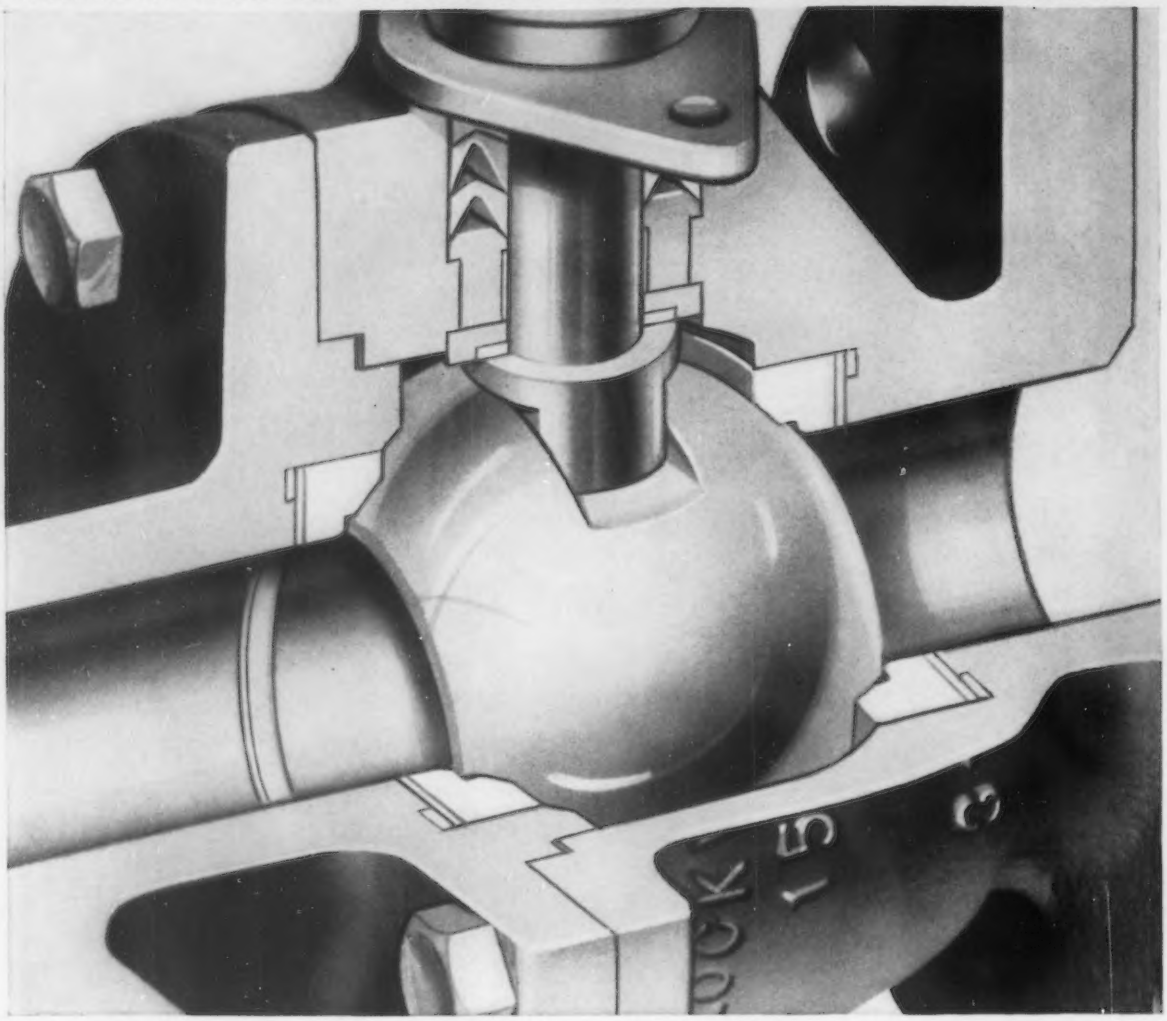
Ask a Black-Clawson Air Systems engineer to give you more facts. You'll be assured of fast, competent service.



AIR SYSTEMS DIVISION
Hamilton, Ohio
COMPLETE AIR SYSTEMS FROM LOG TO REEL

BLACK-CLAWSON

TAKE A CLOSE LOOK AT ROCKWOOD BALL VALVES



Where does experience come in?

Here are some factors to consider. Rockwood was the first to manufacture a commercial ball valve — with a design that has been time-proven in thousands of installations over the past 18 years. Rockwood is constantly making new refinements based on their solid "on-the-line" experience. Refinements such as *truly spring-loaded ball seats . . . rubber seats that seal tight* and stay tight through all conditions . . . *Teflon stem packing* to reduce wear — all intended to make quality better, service life longer.

And when you specify Rockwood Ball Valves, you get a wider choice of ball valve types and sizes.

Rockwood Ball Valves have these other important advantages too:

Ease of maintenance — no lubrication required; parts replaceable with ordinary tools.

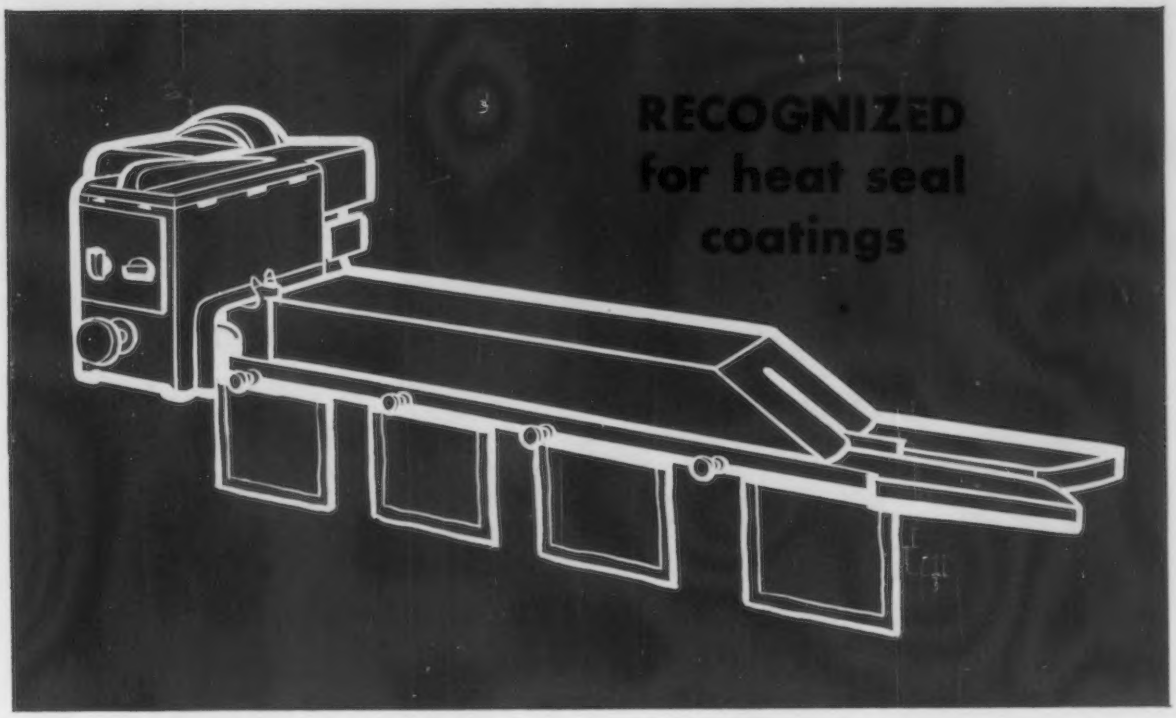
Larger waterway diameters for smoother flow.

Durability — built to withstand rough handling during installation . . . long, hard usage afterward.

Get the complete details from your Rockwood man, or write Rockwood Sprinkler Company, Ball Valve Department, 1010 Harlow Street, Worcester 5, Mass. Distributors in all principal industrial areas. Rockwood Sprinkler Company, A Division of The Gamewell Company, A Subsidiary of E. W. Bliss Company.

ROCKWOOD

BALL VALVES



Gelva® polyvinyl acetate emulsions

GELVA EMULSION PROPERTIES CHART

Type	S-55 Homopolymer Dispersion	TS-22 Homopolymer Dispersion	TS-30 Homopolymer Dispersion	TS-70 Copolymer Dispersion	TS-85 Homopolymer Dispersion	TS-100 Copolymer Dispersion of Vinyl Acetate-Acrylate	C-3 Alkali Soluble Copolymer Dispersion
Total Solids (min.)	55%	55%	55%	55%	54.5%	54.5%	54.5%
Emulsion Viscosity, cps	1100-1300	350-650	1200-1400	900-1300	1400-1700	1000-2000	700-1000
Heat seal temp. of film, °F.	195-205	195-205	200-210	170-180	140-150	180-190	145-155
Mechanical Stability	Excellent	Good	Good	Good	Good	Good	Good
Freeze-Thaw Stability	Very Good	Good	Poor	Very Good	Very Good	Good	Poor

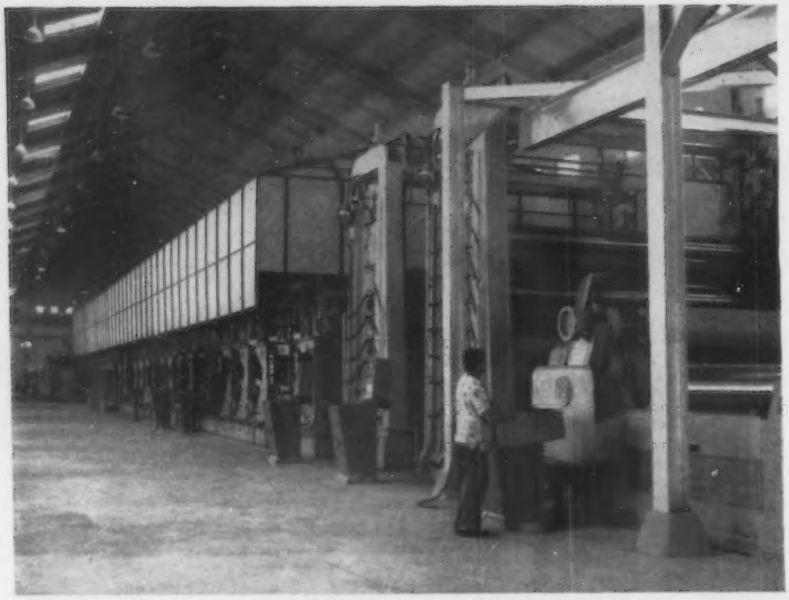
Whether it's a heat seal coating for glassine or for paper . . . or even vinyl chloride, there's a GELVA emulsion for your application.

Excellent adhesion to a wide variety of surfaces, superior compounding stability and machining characteristics, wide solvent tolerance and high bond strength are a few of the important advantages of Shawinigan's GELVA emulsions. The above chart presents physical properties of GELVA emulsions suitable for compounding heat seal coatings.

GELVA emulsions are available in a wide variety of grades and in any desired quantity . . . ready for shipment. Whether you need emulsions for pigment bindings, coatings, sizings . . . stability to light sensitive salts . . . water resistant coatings or molded pulp—you can get complete details by writing Shawinigan Resins Corporation, Dept. 7G, Springfield 1, Massachusetts.

SALES OFFICES: ATLANTA CHICAGO LOS ANGELES NEW YORK CLEVELAND SAN FRANCISCO GREENSBORO SPRINGFIELD ST. LOUIS

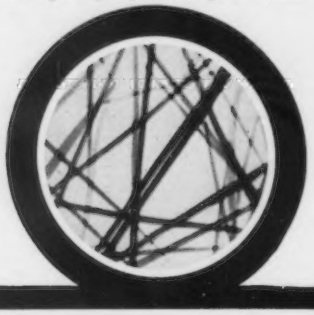
GELVA® *polyvinyl acetate resins by* SHAWINIGAN RESINS®



PAPELERA PULPA-CUBA S.A., TRINIDAD, CUBA

This new integrated pulp and paper mill produces 100 tons per day of high grade bleached and unbleached papers from sugar cane bagasse fiber. Our Organization supplied this project with technical assistance and the major production equipment including a Horkel System for depithing and cleaning the raw bagasse, a Pandia Continuous Digester and the Black-Clawson fourdrinier paper machine shown here.

Completely depithed bagasse fibers



NEW MILLS MAKING PAPER FROM BAGASSE AND STRAW

Wheat straw fibers

EMPAQUES DE CARTON TITAN S.A., MONTERREY, MEXICO

Under a package contract, we supplied principal equipment and start-up assistance for the recent expansion of this mill to produce 60 metric tons per day of unbleached wheat straw pulp for corrugating medium. Straw processing and pulping in a Pandia Continuous Digester is accomplished in this compact, semi-enclosed installation.

These Latin American projects are but two of the 25 pulp and paper mills throughout the world for which the Parsons & Whittemore-Lyddon Organization has provided full or partial planning, technical, economic, and construction services. Twelve different papermaking fibers are utilized among these projects. We even supervise start-up and train local operating personnel, and can arrange for sale of the output on world markets. For literature and full information on how our services can benefit your mill projects, write our nearest office.

THE PARSONS & WHITTEMORE–LYDDON ORGANIZATION

World leaders in the development of pulp and paper mills for the use of local fibers

18-19 Savile Row, London W. 1, England

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Solve your coating problems
economically with these unique
new families of starches . . .

MILO-FILM®
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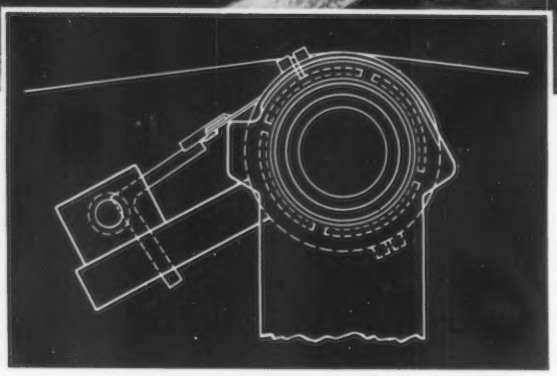
starches

WRITE OR PHONE *Corn Products for expert technical assistance . . .*
helpful data on these fine products for Papermakers:
BUFFALO® · GLOBE® · TEN-O-FILM® · MILO-FILM® · TEXO-FILM® · FOXHEAD® · CORAGUM® · CORAGUM® FD · CRESCENT® CLARO® starches · GLOBE® and GLOBE® LAM-O-DEX® dextrines and gums · EXCELLO® dextrines

CORN PRODUCTS COMPANY INDUSTRIAL DIVISION · 10 East 56 Street, New York 22, N. Y.



Doctored Clean by Lodding

WIRE ROLLS ARE KEPT CLEAN — absolutely clean — when they're Lodding-doctored.

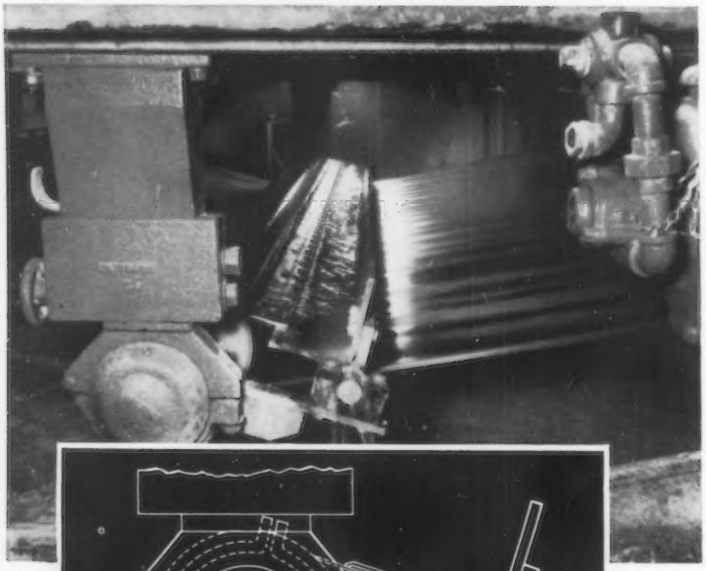
Clean rolls on the Fourdrinier are all-important. They add life to wires, increase production, contribute to the quality of the sheet, while cutting costly downtime.

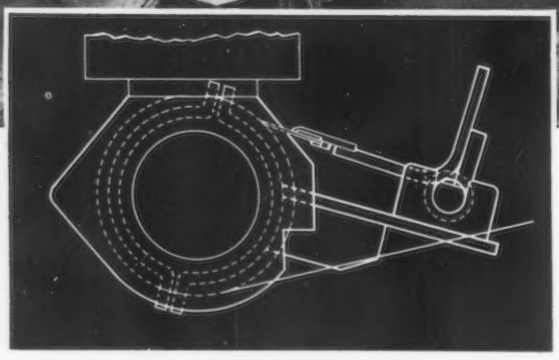
Every day hundreds of mills are profiting from Lodding's exclusive specialization in doctoring. Whether it be for a breast roll, return wire, stretch, wash or wire guide roll, each Lodding Doctor is engineered and custom-made for installation on a specific machine roll.

Proper balance and alignment are built into each doctor — to prevent friction drag, wire or roll damage. Doctor backs, blades and holders come in a wide variety of corrosion-resistant materials, their selection depending upon the particular mill conditions.

From the wet end to the reel Lodding is well qualified with over 30 years of specialized experience to handle every doctoring need, no matter how complex.

Call Lodding or your nearest sales representative for complete information.





LODDING
Engineering Corporation
AUBURN, MASSACHUSETTS

Looking for "Bugs"

in Huyck's Customer Service Department

These men are not entomologists. They are Huyck Customer Service Engineers studying a used felt. Looking for ways to make better felts is their job. They may check portions of this felt in our laboratory for chemical damage, type of plugging material or excessive wear, thus pinpointing causes for removal.

Such unique and complete services complement Huyck's advanced design engineering — further assurance that Huyck performance means High Performance on your machines.

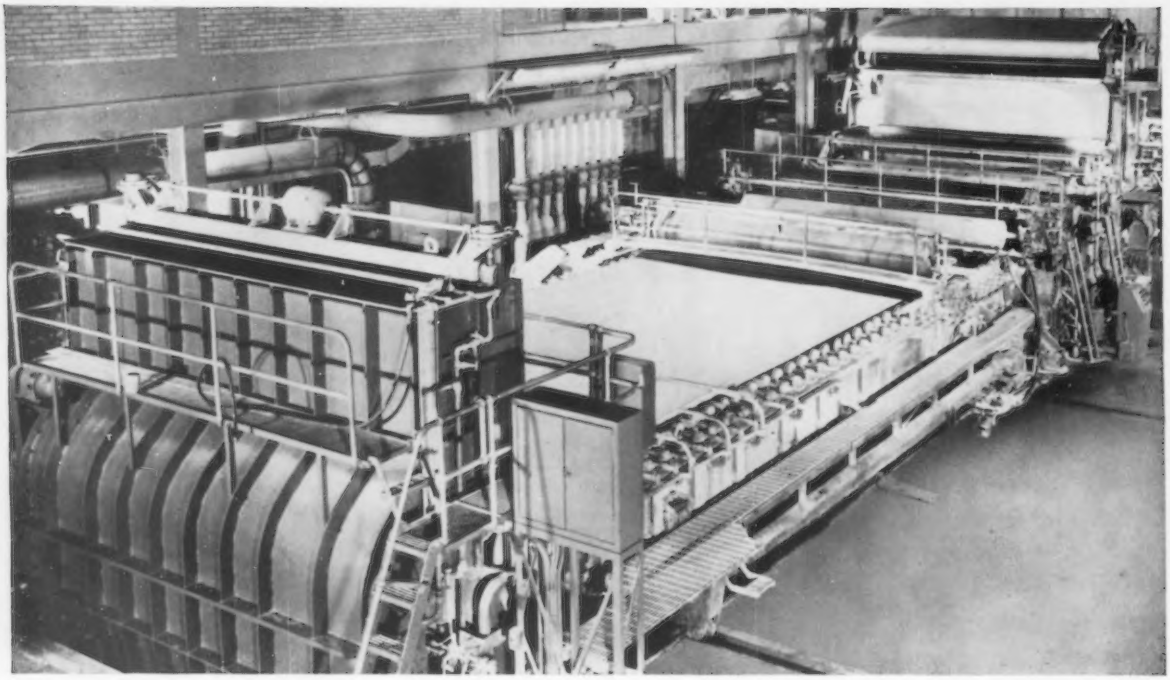
HUYCK FELTS

Huyck Felt Co., Rensselaer, N. Y.; Aliceville, Ala.

Division of Huyck Corporation

In Canada: Kenwood Mills Limited, Arnprior, Ontario

FIRST IN FELTS SINCE 1870



Talk About Rugged Individualism!

Any Fourdrinier machine is an individualist. To begin with, it's not something you buy off a shelf. Custom-made, each one's operating characteristics are all its own and like no other.

It is this very individuality . . . and the resulting potential it offers . . . that has inspired the constant research and development of *WISCONSIN* Fourdrinier Wires, which are as notably different from other wires as each machine is from other machines.

WISCONSIN Wires are custom-matched to the unique characteristics of your specific paper making machine. When the necessary characteristics of this "marriage" are satisfied, then, your machine will develop its full, built-in potential for the highest quality production at the lowest possible operating costs.

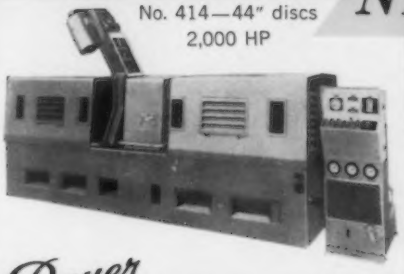
The addition of the new LEV-L-WEVE* to *WISCONSIN'S* full line of Fourdrinier Wires represents an important break-away from traditional Fourdrinier Wire application. LEV-L-WEVE offers many added advantages in wire life, production quality and lower operating costs. *WISCONSIN'S* specialized methods and machines have been developed in over 60 years of practical experience and continued research to supply the best in Fourdrinier Wires. Call or write, today, and a *WWW* representative will stop and tell you how *WISCONSIN* Fourdrinier Wires can help to produce dollar savings for your mill. Of course, there is no obligation to you.

*Patent Applied For.

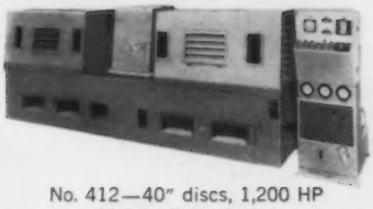
WISCONSIN WIRE WORKS
Box 767 • Dept. J-81
Appleton, Wisconsin

No. 480—48″ discs, 3,000 HP.
World's largest field proven pulp refiner.

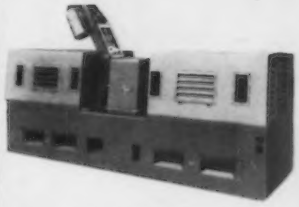
NEW FOR '62!



No. 414—44″ discs
2,000 HP



No. 412—40″ discs, 1,200 HP
(shown without feeder)



No. 401—36″ discs, 600 HP
(shown without control unit)

Bauer

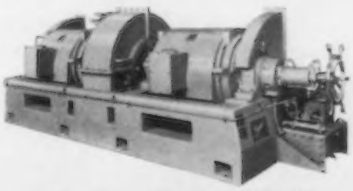
Double Revolving Disc Refiners...*In the size you want!*

With four brand new models of the field proven 480 type now added to the lineup, Bauer offers the most complete selection of double revolving disc refiners to help solve your particular pulp preparation problem. Machines are available with power ratings from 200 HP to 3,000 HP, with disc sizes from 24″ to 48″. The unique double revolving disc action of these refiners preserves, rather than shortens, fiber length, thus developing fiber strength and pliability. These refiners are widely used for groundwood, kraft and sulphite screenings; semi-chemical pulp; Bauerite pulps; sulphite pulp and paper refining (for tissues, etc.); straw, bagasse; high yield sulphite; waste paper and de-ink; and bleaching.

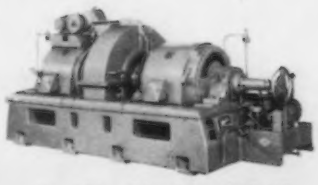
Ask for the new descriptive bulletin.

THE BAUER BROS. CO., Springfield, Ohio

In Canada: The Bauer Bros. Co. (Canada) Ltd., Brantford, Ontario

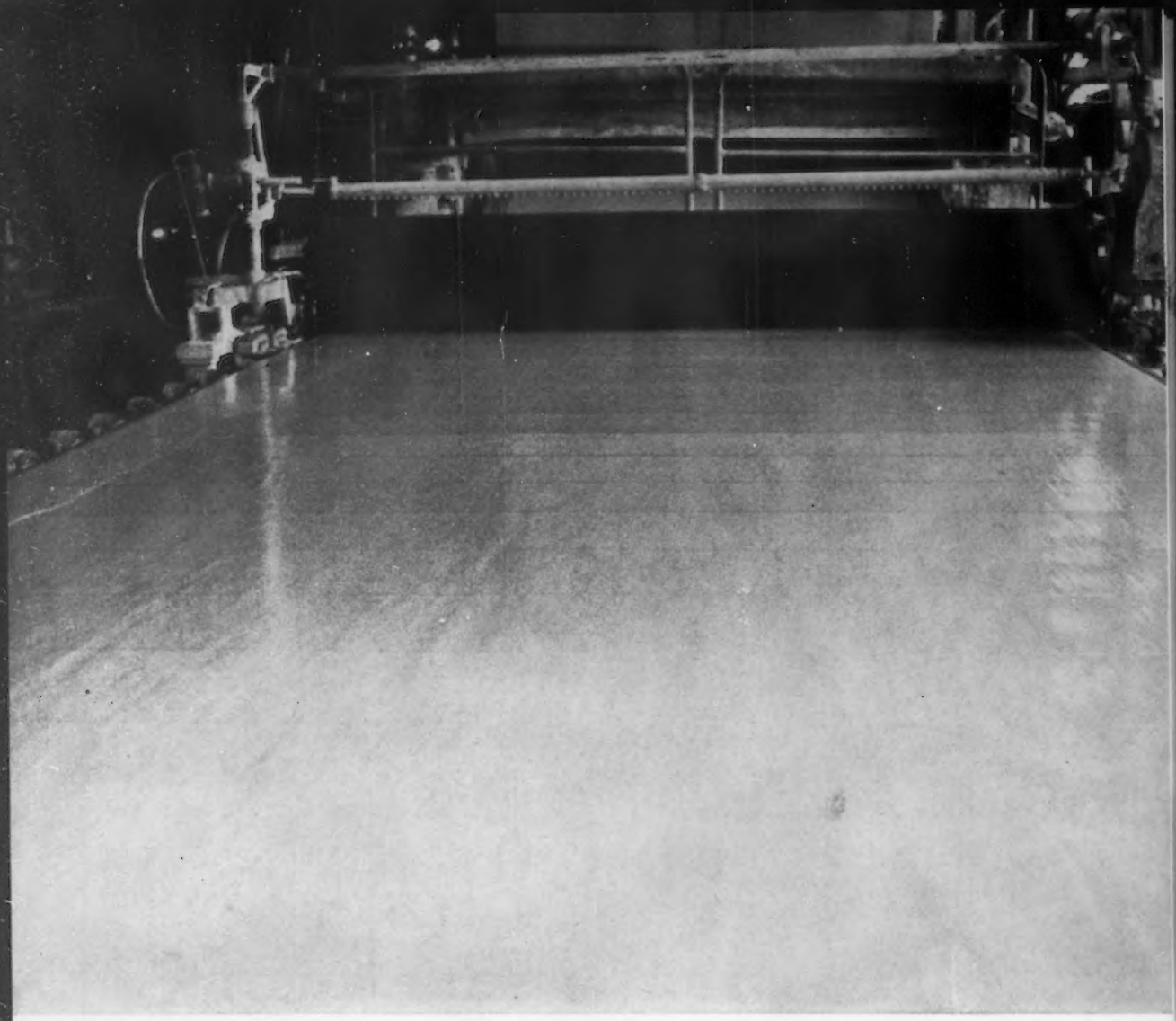


No. 411—40″ discs, 800 HP



No. 400—36″ discs, 400 HP

No. 415—24″ discs, 200 HP



Slime takes a holiday...

permanently, when you use C2 slimicide

C2 sodium chlorite provides the lowest-cost slime control available today. Applied at the wet end, C2 is a most effective, economical slimicide for:

- Newsprint
- Unbleached, semi-bleached and bleached kraft
- Food and paper board
- Printing and book papers

Extensive mill use has proved the unique effectiveness of C2 slimicide . . . on all types of furnish, against all forms of slime, under all conditions. Mill owners report cleaner machines, less down time for wash-ups, fewer breakdowns, no odor problems, no development of resistant strains.

C2 has FDA clearance. It is easy to use, readily soluble in water and non-corrosive to equipment . . . available in dry-flake form and 50% solution for positive protection throughout the white water system. For more information, or a demonstration in your mill, call or write: Olin Mathieson, Baltimore 3, Md.

C2 ® is a trademark

CHEMICALS DIVISION Olin

The secret that couldn't be kept!

When the Johnson Rotary Syphon was ready to go, it was our intention to keep it under wraps for a while . . . until it had been thoroughly field-tested; until we had licked all installation problems; until we had a reasonable inventory on hand.

But good news has a way of getting around, and the clamor for test installations began almost before the patterns were finished. Today Johnson Rotary Syphons are operating in more than 50 mills. Many of these have already embarked on programs of complete conversion.

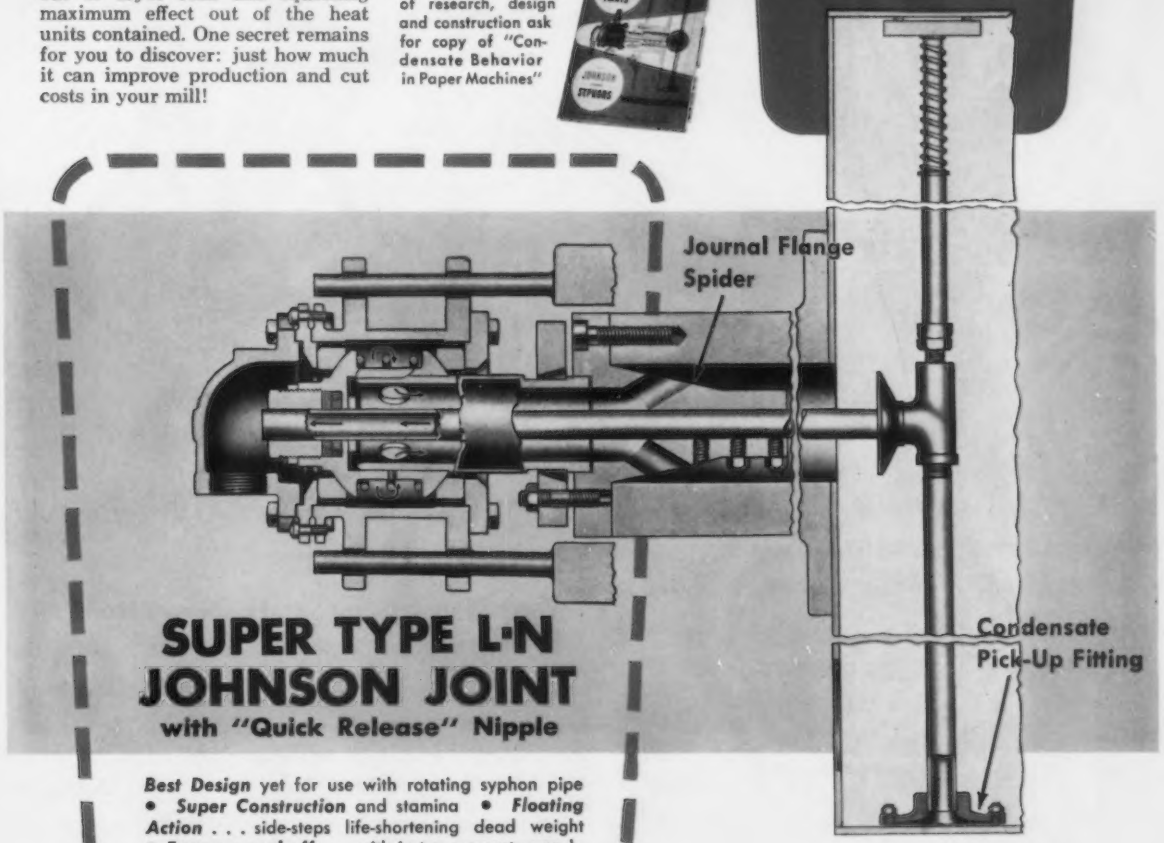
It is no longer a secret that the Johnson Rotary Syphon represents an important breakthrough in draining condensate from dryer rolls of paper machines. A new concept of pick-up design holds condensate film to a minimum, for optimum transfer of heat units to dryer shell. Better drainage helps reduce horsepower demand; eases bearing wear caused by prolonged "cascading"; cuts maintenance all along the line.

Ease of installation is a welcome feature. The Johnson Rotary Syphon can be inserted right through the manhole; there's no need to get inside, no internal drilling or tapping. There's even a journal-inserted syphon for dryers with handholes only. The Rotary Syphon can be installed anywhere along the face of the dryer shell.

As a logical sequel to the Johnson Rotary Pressure Joint, this new Rotary Syphon completes the task of getting steam in and condensate out of dryer rolls and squeezing maximum effect out of the heat units contained. One secret remains for you to discover: just how much it can improve production and cut costs in your mill!

For engineering data — with the full story of research, design and construction ask for copy of "Condensate Behavior in Paper Machines"

The *New* JOHNSON ROTARY SYPHON



SUPER TYPE L-N JOHNSON JOINT
with "Quick Release" Nipple

Best Design yet for use with rotating syphon pipe
- ***Super Construction*** and stamina
- ***Floating Action*** . . . side-steps life-shortening dead weight
- ***Easy on, and off*** . . . with just a crescent wrench.

THE JOHNSON CORPORATION
828 Wood Street, Three Rivers, Michigan
Rotary Pressure Joints • Direct Operated Solenoid Valves

A SKILLED HAND IN CHEMISTRY . . . AT WORK FOR YOU

Nopcote® C-104 is out of this world when it comes to lubricating protein, starch or latex coating colors. A fluid-stable, 50% calcium stearate dispersion, it produces a clean, dust-free coating with improved gloss—even at low calender pressures.

This lubricant improves flow and leveling characteristics to the point where a smooth, even application is possible at high speeds and on any equipment—trailing blade, roll train, air knife, or size press. It minimizes surface pattern, too, and gives your sheet that extra increment of salability.

This mill-proven coating additive is fluid and easy to handle. Other advantages are that it has little effect on color viscosity and permits application of high-solids, quick-drying coatings.

Nopco technical representatives will be happy to supply samples of Nopcote C-104 and set up a mill trial at your convenience.

Dispersants
Defoamers
Wax Sizes
Calender Stack Lubricants
Detergents
Emulsifiers

NOPCO CHEMICAL COMPANY
60 Park Place, Newark, N.J.
Plants: Harrison, N.J. • Carlstadt, N.J. • Richmond, Calif. Cedartown, Ga. • London, Canada • Mexico, D.F. • Corbeil, France • Sydney, Australia
Manufacturing Licensees Throughout the World

Buyer's Memo to Himself:

Need experienced supplier

Call Marathon

Over 50 years of service to the industry is your assurance that Marathon knows what it takes to supply the needs of the converter with better materials for better end products. A highly instrumented operation assures constant, foolproof quality control . . . and product uniformity.

Keep Marathon in mind for pulp, printing papers, paperboard and specialty materials.

Pulp, Paper and Paperboard Department

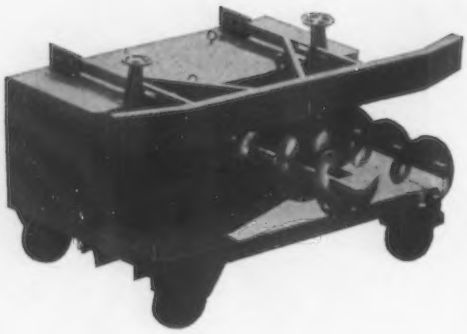
marathon

A Division of American Can Company

MENASHA, WISCONSIN

A DEPENDABLE SOURCE FOR QUALITY CONVERTING MATERIALS

SLAB CHIP STORAGE BECOMES POPULAR WITH IMPCO CHIP DISCHARGER



This discharger travels back and forth on rails in a tunnel under your chip pile. The action of its two counter-rotating screws withdraws the chips through a continuous opening in the side of the tunnel onto a traveling belt conveyor. A rapid and regulated flow of chips is fed directly to your digesters. No operator is required since the discharger is remote controlled from the digester floor. Feed capacities up to 100 cords per hour with 15 connected horsepower.

IMPROVED
MACHINERY INC.
NASHUA, NEW HAMPSHIRE

IMPCO®

for paper and board coating save with high-fluidity Penford Gums

the new high-fluidity Penford Gums replace synthetic latices in high-solids pigmented coatings. Their fluidity plus other traits make these hydroxy ethyl ether derivatives suitable for use as the sole adhesive in some pigmented coatings and in combination with latices in other cases. Coatings so made have low stable viscosity, high gloss and excellent ink receptivity.

The new high-fluidity Penford Gums are available in two groups: the 2000 and 3000 series. Both groups offer a wide range of viscosity. Use the coupon to request additional information and formulas.

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PENICK & FORD, LTD., INC. • 750 THIRD AVENUE, NEW YORK 17, N. Y.

Please send me data on the new high-fluidity Penford Gums (2000 and 3000 series) for use in connection with.....

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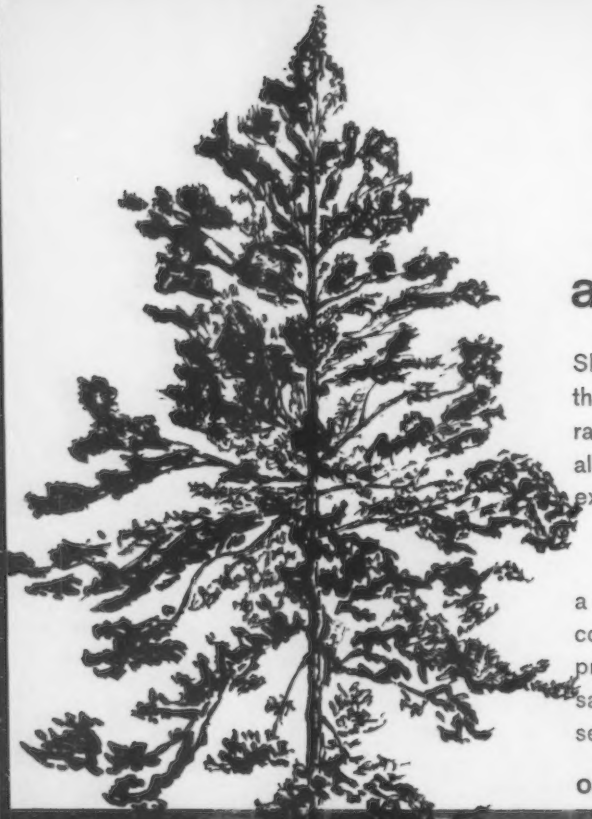
Name.....

Title.....

Company.....

Street.....

City.....State.....



a tree grows slow in Sweden

Slow-growing Swedish trees produce long, strong fibers... the kind that make the best pulp. Starting with this superior raw material, SCA uses exacting controls to produce pulps of all grades noted all over the world for their consistent excellence. Now SCA introduces

Ostrand W 91

a chlorine dioxide bleached kraft pulp with high brightness, controlled cleanliness, combined with outstanding strength properties. For information or service, call on our experienced sales force with offices located throughout the world to serve your needs.

Ostrand Sulphate Mill

SVENSKA CELLULOSA AB

(The Swedish Cellulose Company)

SUNDSVALL, SWEDEN

Exclusive U. S. Sales Representative: Cellulose Sales Company, 250 Park Avenue, New York

things look better...

with DYLEX® latices in the paper coating

With Koppers new series of latices in your coatings, paper has unexcelled printability. Clear, sharp, true-to-life reproductions. Turn the page and find out why!

things look better...

with DYLEX latices in paper coatings because they guard your paper against surface rupture. Some papers can't stand the high speeds of today's printing presses; they break or tear. But DYLEX latices give your coated paper all the *strength* it needs. DYLEX latices coat smoothly, won't lump or streak . . . papers print clearly without defects. Type and color illustrations show off with remarkable sharpness. DYLEX latices have excellent mechanical stability and they *blend* perfectly with other coating additives. They're less foamy, have less odor, and are easy to apply.

Koppers produces DYLEX K-52 for conventional clay coatings; DYLEX K-54 for superior adhesive qualities; and DYLEX K-85 for specialty papers requiring extremely high gloss. For more detailed information on how these latices can make smoother, stronger paper coatings for you, write Koppers Company, Inc., Plastics Division, Dept. 1611, Pittsburgh 19, Pennsylvania.

KOPPERS PLASTICS

Fabric and fashion illustrations courtesy of E. I. du Pont de Nemours & Co., Inc.

This insert is printed on Polar Offset Enamel—manufactured by Oxford Paper Company, a prominent user of DYLEX K-54 latex for paper coating.

felt facts

Recognize these men? They're among the top executives, designers, chemists, and service and sales engineers who plan, edit and contribute to Albany Felt Company's FELT FACTS.

The experience and skills of these men are made available to the paper industry through this eight-times-a-year publication which has won the respect of papermakers everywhere.

Readers tell us they depend upon the authoritative information about paper machine felts detailed in FELT FACTS. This comes from the number of key men who participate in making this publication an informative, accurate, technical reference work. As such, FELT FACTS can and does assist papermakers in producing more tons per day, more days per felt.

Clockwise, by groups from left are: Laurence M. Woodside, Chief Eng., Tech. Field Services, and S. Stuart Engle, Tech. Director. John S. Sweet, Ass't. Chief Chemist; Carl C. Gordon, Chief Chemist, and Z. J. Chagnon, Div. V. President. Thomas O. Tietz, Adv. Mgr.; David F. McConaughy, Ass't. Chief Designer; W. S. Wightman, Ass't. Chief Designer; Harold F. Hedberg, V. President, Research, and James E. Smith, V. President and Gen. Mgr., Albany Felt Co. of Canada, Ltd. Samuel Van Praag, Sales Mgr.; Wayne G. Davis, V. President, Felt Sales, and James Garofalo, Service Eng.

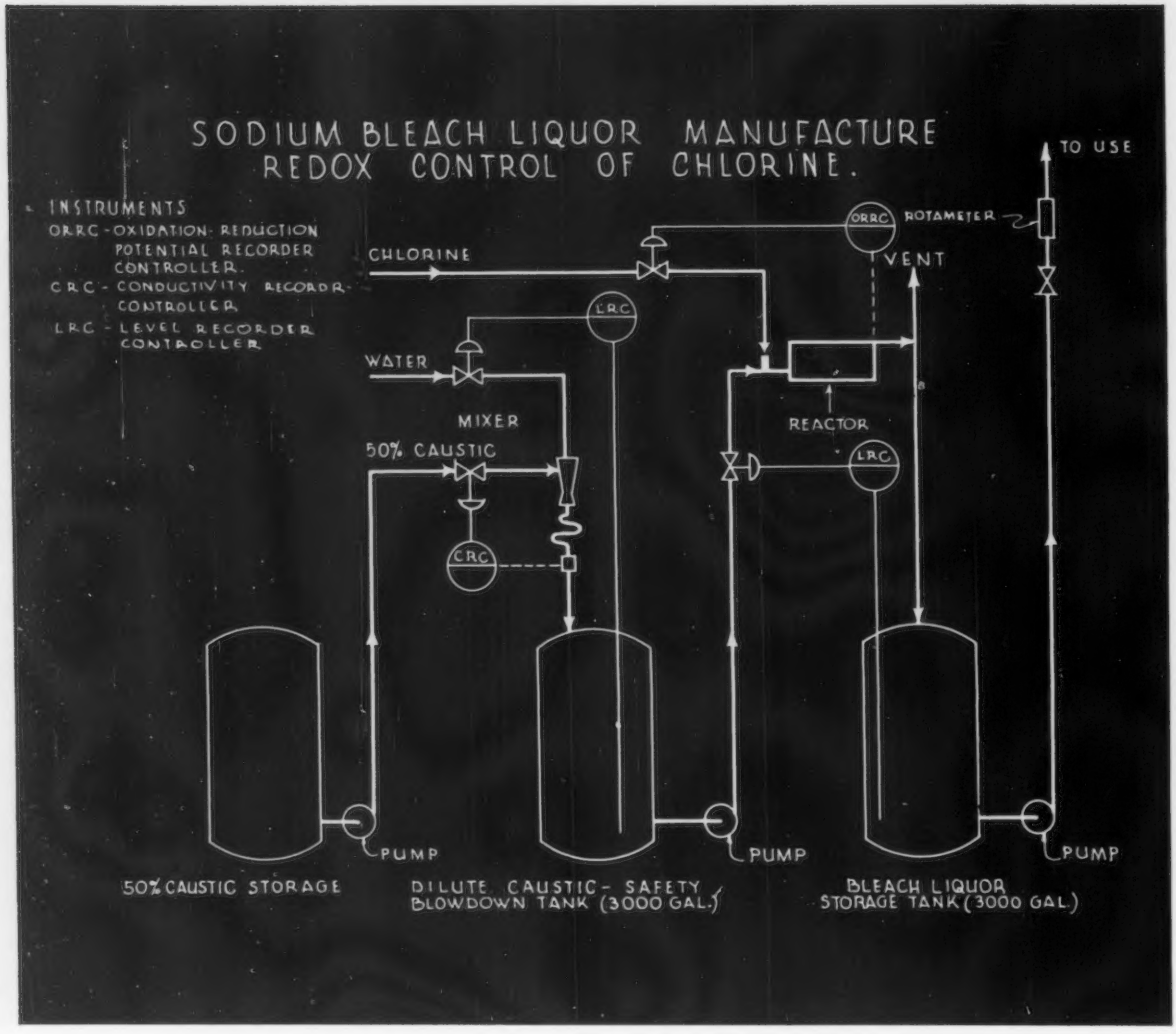
ALBANY FELT COMPANY
ALBANY, N.Y.

AF

Dedicated to Paper Industry Progress

N. Monmouth, Maine Hoosick Falls, N. Y. St. Stephen, S. C.
Cowansville, Quebec Cuautitlan, Mexico

TALK FELT FACTS WITH YOUR ALBANY FELT SALES ENGINEER



How to make bleach liquor automatically and continuously

With this simple Hooker system you can produce sodium hypochlorite* continuously and automatically. Control of bleach-liquor composition is automatic, resulting in more uniform bleach and an improved final product.

Chemical costs are at a minimum, because excessive chemical usages are eliminated. Labor costs are also at a minimum, since the plant operates automatically and requires only occasional supervision. Installation costs are lower, because large reaction and storage tanks are not needed.

How the System Operates—50% caustic soda and dilution water are metered to a caustic-dilution tank. A level-controller adjusts the flow of water to match the rate of withdrawal of bleach from the unit.

A conductivity controller meters the 50% caustic solution to maintain a constant dilute caustic concentration (3-5%).

Dilute caustic soda solution is pumped through a custom-designed Hooker reactor, of which there are several types, and combines with chlorine to form soda bleach.

The flow of dilute caustic is controlled by a level-controller in the bleach-liquor storage tank, while the chlorine addition is controlled by the oxidation-reduction recorder controller.

If you need relatively large amounts of 30-to-40-gram-per-liter available-chlorine bleach liquor on a continuous basis, this Hooker system can cut your costs by a considerable margin while giving you the top quality you want. For more information on this process, write for Bulletin No. 251, "Continuous Bleach Liquor Manufacture."

*A similar system with a modified reactor is available for calcium hypochlorite.

HOOKER CHEMICAL CORPORATION

1810 FORTY-SEVENTH ST., NIAGARA FALLS, N. Y. • 605 ALEXANDER AVE., TACOMA, WASH.

HOOKER CHEMICALS PLASTICS

Sales offices: Buffalo, Chicago, Detroit, Los Angeles, New York, Niagara Falls, Philadelphia, Tacoma, Worcester, Mass. *In Canada:* Hooker Chemicals Limited, North Vancouver, B. C.

finer wheel feed—

one of the many design refinements keeping swing-rest grinder sales climbing

The fine wheel-feed unit shown above is now a standard feature of Farrel's swing-rest roll grinder. This device permits the operator to apply precisely the wheel pressure necessary to eliminate feed lines in finish grinding.

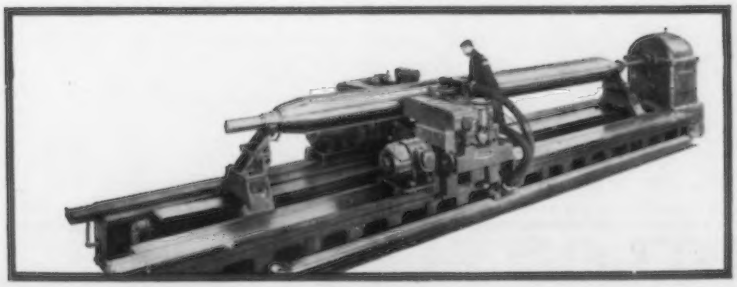
The design incorporates a wheelhead which is tilted into the work through the same support and leverage system used in the Farrel crowning device. Since the system is free of backlash, it permits positive wheel movement in either direction. In previous designs, accuracy was limited by friction resulting from a sliding wheelhead.

Refinements like this are responsible for the swing-rest machine's reputation as "the most accurate mechanism available for grinding long rolls." They also help to explain the continuing demand for Farrel swing-rest roll grinders in paper mills throughout the world. The current record: 61 orders in less than four years!

If you are not familiar with the advantages of swing-rest grinding, ask for a copy of bulletin 119-A.

FARREL-BIRMINGHAM COMPANY, INC.
ANSONIA, CONNECTICUT

Plants: Ansonia and Derby, Conn., Buffalo and Rochester, N. Y.
Sales Offices: Ansonia, Buffalo, Akron, Chicago, Los Angeles, Houston, Atlanta
European Office: Piazza della Republica 32, Milano, Italy



FARREL®

FB-1220

ATLAC® 382

GLASS REINFORCED PLASTIC

corrosion resistant construction material for pulp and paper mill equipment

Where corrosion takes too great a toll—in tanks, ducts, fume hoods, chests, vapor condensers (and similar equipment)—you and your fabricator should take a good look at glass reinforced ATLAC 382 bisphenol polyester resin. It offers seven distinct advantages in pulp and paper mill operations as a construction material:

1 **Corrosion resistance** ATLAC 382 is virtually immune to the bleaches, acids, salts and alkalis used in paper making—at temperatures below 250°F. One example: a 4,400-gallon tank of ATLAC 382 is still in mint condition after two years of alternately storing 14% sodium hypochlorite and caustic soda.

2 **High strength** Pound for pound, reinforced ATLAC 382 is stronger than steel. You get the same total strength with less total weight. Examples: 30,000-gallon tanks of ATLAC 382 are completely self-supporting...and even the largest hoods need no corrosion-prone metal bracing.

3 **Light weight** Equipment of ATLAC 382 is generally lighter than wood, Transite, or metal equipment. In one case, a 1,000-gallon tank of ¼" ATLAC 382 weighed 300 pounds, compared with 4.3 times that weight for alloy steel.

4 **Economy** ATLAC 382 equipment generally costs one-half to one-third less than rubber-lined or tiled equipment, and is normally equal to 304 and lower in price than 316 stainless steel. It is almost always a better buy than the more exotic metals if temperatures and pressures are not too high.

5 **Design flexibility** There are very few practical limits in size and shape for equipment of ATLAC 382. What's more, equipment can sometimes be redesigned to take advantage of ATLAC 382's unique structural characteristics—resulting in extra simplification, practicality and cost reduction.

6 **Easy installation** Because of reinforced ATLAC 382's light weight, relatively few men are needed to install it. Also, since it can be joined right on the plant floor, large equipment can be shipped in sections and field-erected. Equipment is readily changed and modified. Ducting can be relocated and reassembled without special equipment or personnel.

7 **Low maintenance** ATLAC 382 equipment needs virtually no periodic maintenance. It never needs painting or rust removal, always looks clean and attractive. Physical damage is easy to repair generally without down-time.

But why not get the feel of ATLAC 382 for yourself? Let us send you details on ATLAC 382, its uses in the pulp and paper industry, and a comparison of the corrosion resistance of various reinforced plastics. At the same time, we'll be glad to supply a test sample so you can prove to your own satisfaction that ATLAC 382 is well worth considering. For your sample—and data on ATLAC 382—mail the coupon, or write Atlas direct.

Atlas Chemical Industries, Inc
Wilmington 99, Delaware

Please send details on ATLAS 382, and a free test sample.

NAME ..... TITLE .....

COMPANY .....

ADDRESS .....

CITY ..... ZONE ..... STATE .....

ATLAS CHEMICAL INDUSTRIES, INC.

Trends

Corrugated Box Shipments Breaking All Records

Corrugated box shipments and production set a new weekly record in the week ending September 30 with 2.8 billion square feet. September output was a new monthly record, also third quarter production was a new high for that period, it was reported on October 10th at the Fibre Box Ass'n. Annual Meeting. The Econometric Institute predicts that the growth of this segment of our industry will average 4.4% per year between now and 1975. This compares with 5.8% annually during the past decade. In spite of the new records in demand and production, prices are at the lowest level in the past decade, excepting a minor increase this summer.

Paper and Board Mill Operating Rates for Sept.

Paper mill operating rate in September was 88% (Sept. 1960 was 89%) and board mill rate was 92% (Sept. 1960 was 88%). September operating rates are always depressed due to Labor Day.

Exports 9% Ahead in First Half

Exports of pulp, paper and board during the first six months of this year were valued at $223 million, up $18 million or 9% over the first half of 1960.

Waste Paper Prices Continue Upward

As predicted here earlier, waste paper prices are continuing the upward movement begun in September. This is particularly notable in the New York area, with 16 grades moving up the week beginning October 9, despite increases in some of these grades the previous week. Further increases were also posted for the Boston area, notably in the better grades.

British Industry Continues to Outpace 1960

Production of paper and board in Great Britain continues to run ahead of last year. In the first eight months of this year output was 3% above the same period a year ago.

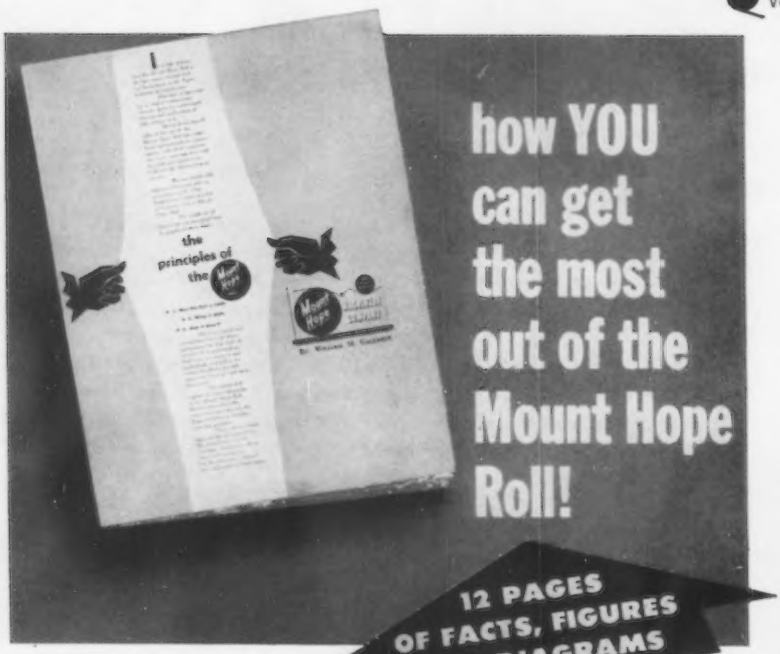
August Pulp Output Ran 5% Ahead

Wood pulp production in the United States during August was 5% above August 1960 according to the U. S. Pulp Producers Ass'n. In that month domestic shipment of U. S. market pulp were off 12% but exports were up 7%. For the year to date (eight months) pulp production was up 1%, domestic shipment off 12% and exports up 7%.

FACTS, FIGURES AND IDEAS DESIGNED TO SAVE YOU TIME AND MONEY

web control NEWS

Volume 1, Number 3



PREPARED WITH YOU IN MIND... WRITE FOR YOUR COPIES TODAY

"The Principles of the Mount Hope Roll," a 12-page dissertation on how to get best operating results from Mount Hope Rolls in paper mills and converting plants, now is available from Mount Hope Machinery Company, Taunton, Mass. The liberally-illustrated (25 drawings and photos) "how-to" booklet was designed to serve as an easily-understood operating manual.

The information was compiled and written by William Gallahue, Mount Hope's General Sales Manager.

It was prepared to answer numerous requests for reprints after the information was delivered as a slide-film talk before the Superintendent's Association of the Pulp and Paper Industry. Send for your copies today on your Company Letterhead or write your name, company and address on this ad and mail it to us. Do it now to be sure of your copy before our supply runs out.

Web Viewer Stops Motion, Shows Every Inch of Length and Width of Web

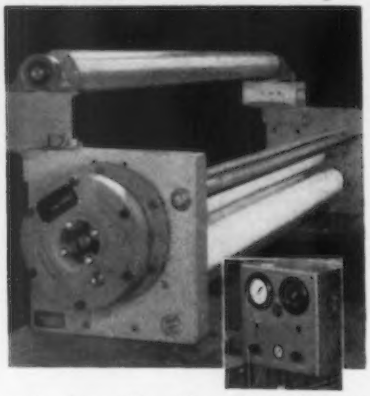
Now with Mount Hope's remarkable new Barr & Stroud WEB VIEWER you need not stop your press to check register, and:

There is no need to move the unit, yet entire pattern is seen actual size and color; the viewer is compact (portable model available, too), can be installed on vertical, horizontal or angular run, and web can be viewed from any angle; no additional light is required (unless web area is dark); three inexpensive drives are available—Synchronous; Variable Speed; and Mechanical (when explosion proof electrical requirements must be met).

New Light Duty Packaged Designs in Winding and Unwind Equipment Provide Manual or Automatic Tension Control and Edge Guiding

We are pleased to announce the following basic line of Mount Hope Wind and Unwind Stands and Tension Control and Edge Control equipment:

1. Basic stand with manual letoff brake.
2. Basic stand with floating carriage base.
3. Basic stand with automatic tension control.
4. Basic stand with both floating carriage base and automatic tension control.
5. Wide range of safety chuck capacities and stand dimensions for various roll weights and diameters including selections of manual and air actuated brakes, air-cooled and water-cooled.



As always, Your Mount Hope Engineer can recommend just the right equipment for your specific requirements. And, if you desire, a demonstration can be arranged with your material in the Mount Hope Demonstration Room in Taunton.

If you have any web control problem, let us help you with it. You'll find out why so many papermakers and converters like doing business with Mount Hope.

MOUNT HOPE MACHINERY COMPANY
15 FIFTH STREET, TAUNTON, MASS.

Plants: Taunton, Charlotte and in England.
Sales Engineers in Principal Cities.
World Wide Distributors: Mount Hope Machinery S.A., Lausanne, Switzerland.

Mount Hope Makes the Following Web Control Equipment for Papermakers and Converters:

- Mount Hope Rolls
- Vari-Bow Rolls
- Felt Preservers
- Tension Controls
- Floating Roll Guides
- Swinging Roll Guides
- Floating Carriage Guides
- Web Viewer
- Precision Guiders
- Light Duty Wind & Unwind Stands

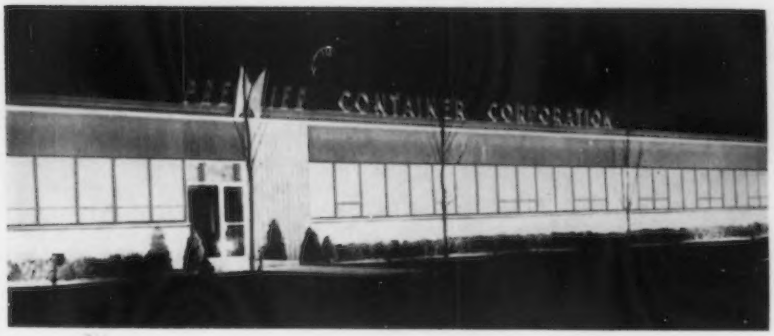
The following are Registered Trade Marks: Mount Hope; Vari-Bow.

Mount Hope Web Control Equipment MACHINERY COMPANY 15 FIFTH STREET, TAUNTON, MASSACHUSETTS

© 1961 Mount Hope Machinery Company

For more information on the products mentioned above or on any felt or paper handling problem, contact Mount Hope or check the Reader Service Card. Please write in on the card the product(s) you are interested in.

PAPER TRADE JOURNAL
WEEK OF OCTOBER 16, 1961



SFI to Build Grocery Bag Plant at Snowflake and Acquire Premier Container

Additional financing in the amount of $5 million to be used to build and acquire paper converters and for further working capital purposes has been arranged by Southwest Forest Industries, it was announced by J. B. Edens, company president.

Concurrent with the announcement of the completion of the financing arrangements, Mr. Edens reported that the company has contracted to build a grocery bag manufacturing plant at its paper and pulp mill in Snowflake Mills, Arizona., and has entered into an agreement with the stockholders of Premier Container Corp. in Chicago to acquire that company.

The grocery bag plant initially will consume 800 tons per month of the Kraft mill's production. It is expected to be in operation early in January.

The Premier Container Corp. located in Chicago is an established converter of corrugated sheet stock into corrugated boxes and containers. Its current annual sales volume is in excess of $3 million. The company's new and modern plant occupies 90,600 square feet on eight acres of land and employs 125 people.

Affiliation with Premier and the building of the grocery bag plant will bring the number of Southwest's operations to 13. In addition to three sawmills in Arizona and Texas, which produce about 180 million board feet of lumber annually, the $32.5 million paper and pulp mill which has a rated capacity of 75 thousand tons of newsprint and 65 thousand tons of kraft paper and linerboard, a wood treating plant and a wood box manufacturing unit, all in Arizona, Southwest operates a Container Division with plants in Arizona and in Los Angeles, and three other paper companies, all in Los Angeles.

Warren Gets Oscar for Annual Report

S. D. Warren Co. has been selected for the second consecutive year for a first place award for having issued the best stockholder annual report of the paper and pulp industry in the Twenty-first Annual Report Survey sponsored by "Financial World," national weekly magazine. Symbolic of the achievement, a bronze Oscar-of-Industry trophy will be presented to Wesley P. Heilman, a director of the company, on Monday evening, October 30, 1961, at an awards banquet in the grand ballroom of the Statler Hilton Hotel in New York City.

More than 5,000 reports were reviewed in 96 categories during the 1961 competition.

Columbia Stockholders Warn Against Possible Sale

A group of minority stockholders in Columbia River Paper Co. has sent out a circular letter against letting the company be sold for less than the best price. Company president, Nils G. Teren, said he was drafting a reply.

The president added that the investment firm of Blythe & Co. has been talking with company officials about buying it but has made no offer. There are no direct negotiations under way with Boise Cascade Corp., he said. That company said in August it was dickering for Columbia River Paper.

The company has a mill at Camas, Wash., and offices in Portland. It has been the subject of recurrent rumors of sale.

The circular letter from a stockholders' committee which Mr. Teren said he would answer said some small stockholders feared the company would be sold without open negotiations to enable all prospective buyers to bid.

Paper and Paperboard Production

The American Paper and Pulp Association reported the ratio of the United States paper production to mill capacity for the week ending September 30, 1961, at 93.5 per cent, compared with 93.2 per cent, revised, for the preceding week. The ratio was 95.5 per cent for the corresponding week a year ago.

The National Paperboard Association reported the paperboard production ratio for the week ending September 30, 1961, at 98 per cent, compared with 97 per cent for the preceding week and 93 per cent for the corresponding week a year ago.

(Detailed Statistics on page 62)

Peninsular Paper Announces Major Expansion at Ypsilanti Mill

Daniel T. Quirk, president of Peninsular Paper Co. of Ypsilanti, Mich., has announced plans for a major expansion of the mill's facilities. Construction will begin as soon as possible on a new building which will add 38,000 square feet of floor space to provide enlarged facilities for the finishing department, shipping department and warehouse area and also to house the company's new general offices. The new building, scheduled for completion by the fall of 1962, will adjoin Peninsular's present facilities.

Another new building recently completed at the mill's headquarters is temporarily being used for warehouse space. This building was designed and built to house a new papermaking machine.

The second building soon to be constructed, by providing new warehouse space, will pave the way for installation of the new paper machine in the near future.

Consolidated Acquires Cleveland Firm

Consolidated Paper Co., Monroe, Mich., has announced the acquisition of the Meyers Corrugated Box Co., a well-known Cleveland, Ohio, corrugated shipping container manufacturer. It will be operated as a division of the parent company to be known as Meyers Corrugated Box Co., Cleveland Division of Consolidated Paper Co. The Meyers company was founded some 30 years ago by Milton G. Meyers who will remain with the new division as manager and will continue to be in charge of the operation.

The Meyers sales force will now become a part of the Consolidated Paper sales and marketing organization which has maintained offices in Cleveland for many years.

C. H. R. Johnson, Consolidated's president, in making the announcement of the acquisition stated—"This is another step in the company's long range expansion program to acquire and build converting plants. Branch operations national in scope will assure us of an outlet for the products of our mills in Monroe." He further stated—"This acquisition will give us additional volume for liner and corrugating medium and thereby provide additional employment for our Monroe mills."

In April of 1961, the company announced plans for its Pulaski, Tenn. branch plant, production being scheduled to start late in November and, in May, the acquisition, with the Crandon Paper mills, Inc., of two converting plants in Mississippi.

Mead Papers to Distribute St. Croix Printing Paper

Mead Paper, Inc., has been named exclusive sales agent by the St. Croix Paper Co. for a new line of groundwood printing paper grades.

Mead Papers, Inc., a subsidiary of the Mead Corp., will distribute the new line through established sales offices in New York City, Chicago, Boston, Philadelphia, Atlanta, Detroit, Minneapolis, Cincinnati, St. Louis, Dallas, Greensboro, N. C., Washington, D. C., Kansas City, and Dayton.

Up to the present time, St. Croix has manufactured only newsprint paper. In 1960, the company rebuilt its No. 1 paper machine and now has a machine capable of manufacturing groundwood specialty papers.

Marathon To Shut Down 60-Year-Old Machine

Plans to discontinue operation of a 60-year-old paper machine that is no longer capable of meeting modern production standards were announced to Canal plant paper mill employes of the Marathon Division of American Can Co. in Menasha, Wis.

"Our decision to shut down this equipment, one of two relatively small paper machines located at Menasha, was made only after many months of painstaking study by a special task force," Marathon general manager Donald A. Snyder, said.

A combination of factors—age, narrow width and slow speed—brought about "a condition of forced obsolescence that makes it economically impractical" to continue operation of the machine, Mr. Snyder pointed out. Increased production of similar grades of paper by other Marathon mills more than offsets this machine's tonnage.

To permit an orderly shutdown, a target date of January 1, 1962, has been established for permanently discontinuing operation of the machine, known as Menasha No. 2.

General Manifold Buys Horn Ohio Co.

General Manifold & Printing Co. of Franklin, Pa., has purchased Horn Ohio Co., lithography and rapid mail house in Cleveland, for an undisclosed price.

Clupak Now to Be Produced in Germany

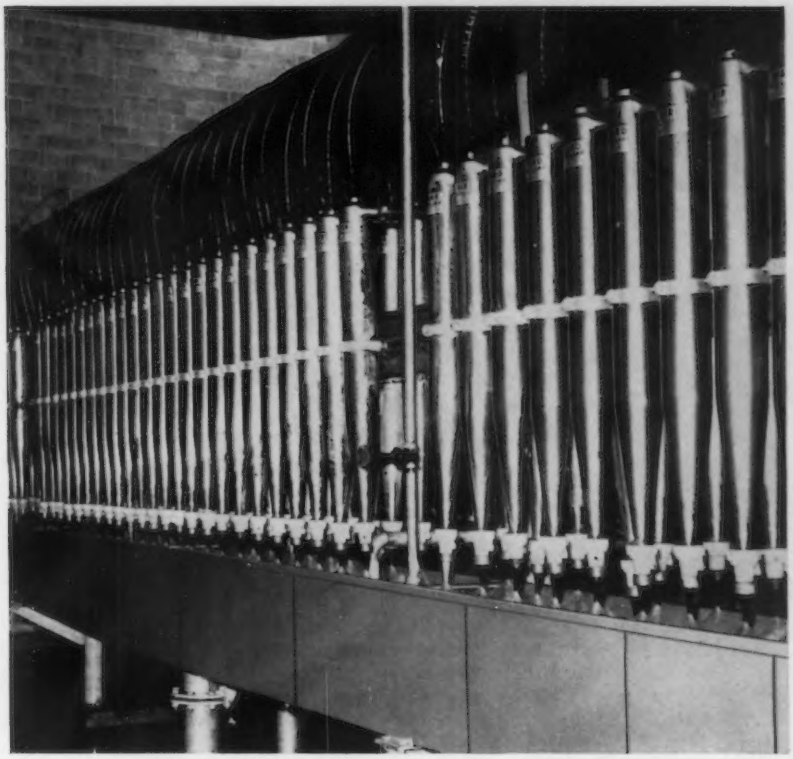
Zellstoffabrik Waldhof, with headquarters at Mannheim and plants in 13 different cities in West Germany, has been granted a license to make Clupak extensible paper, it has been announced by G. E. Amerman, president of Clupak, Inc.

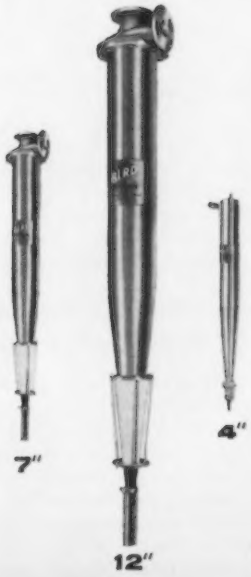
The licensing agreement between Clupak, Inc., and Zellstoffabrik Waldhof calls for the German industrial firm's installation of its first extensible unit on its Number One machine at Oker paper mill.

The signing of the license was concluded at Waldhof-Haus in Mannheim with Dr. Frederich Dorn, president, representing his company and by G. E. Amerman, president of Clupak, Inc.

This brings to 25 the total number of major domestic and foreign companies now licensed by Clupak, Inc., to manufacture extensible paper.

Is YOUR Stock As CLEAN As BIRD CYCLEANS Can Make It?





Today there is hardly a kind, grade or volume of pulp and paper stock that cannot be *cycleaned* to better its quality, uniformity and salability. Reduction in shive and speck count is always substantial — often extraordinary.

Capacity per Cyclean ranges from 36 to 850 gpm. Advanced, modern design virtually eliminates operating and maintenance problems. The small diameter Cycleans may be equipped with *patented automatic purge tips* that do not plug. The larger diameter Cycleans are of special *baffle head* construction that prevents ingress of air. *Sintered ceramic* cone sections and tips defy wear.

Ask us to recommend the Cyclean set-up that will make you the most efficient and economical clean-up.

BIRD MACHINE COMPANY

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REGIONAL OFFICES: EVANSTON, ILLINOIS
PORTLAND 4, OREGON • ATLANTA 9, GEORGIA
Canadian Manufacturers of Bird Machinery
CANADIAN INGERSOLL-RAND COMPANY, Limited, Montreal

PAPER PEOPLE

LEFT TO RIGHT, THEY ARE: Fourth row—Richard L. Hill, Grand Saline, Tex.; Tyrone G. Goodart, Flint, Mich.; C. Joseph Hamburger, Glenside, Pa.; C. Neal Carter, Savannah, Tenn. Third row—Harry L. Spiegelberg, Larsen, Wis.; James F. Sobieski, Omro, Wis.; James A. Elstran, Gardena, Calif.; Harold L. Hintz, Hamden, Conn. Second row—R. Paul Grimm, Ridgefield Park, N. J.; Thomas L. Scroggins, Gravette, Ark.; Robert D. Brooks, Coquille, Ore.; E. Lee Showalter, special student, Larry E. Gruenewald, Osceola, Wis. First row—James R. Weber, Jr., Brookville, Ohio; John H. Swafford, Oxford, Ohio; Roger D. Lambert, Andrews, S. C.; James L. Burke, Auburn, Me.

Class Enters I.P.C. Graduate School

Seventeen students are enrolled in the 32nd class to enter the graduate school of The Institute of Paper Chemistry.

The new students represent bachelors degrees from 13 colleges and universities, and are from 14 different states.

Each new student, with all other regular students of the Institute who are United States citizens, is awarded a full time scholarship.

Brown Names Sales Mgr. For Printing Papers Div.

Walter N. Kinsley, of Rowayton, Conn., has been named sales manager of Brown Co.'s newly formed Printing Papers Division.

Mr. Kinsley was formerly Eastern District sales manager of St. Regis Paper Co., and has been employed in the field of paper sales since 1934. His experience includes six years with Whitaker Paper Co. in Chicago prior to 1940 and again after his discharge from the United States Army in 1946; with Messenger Paper Co. in Chicago in 1948; and with St. Regis in Chicago and New York since 1953.

Between 1956 and 1958 he was assistant to the vice president, Printing Papers Division, at St. Regis in New York, and since 1958 has been Eastern District sales manager.

Leopold Chosen as ESPRI Director

The State University College of Forestry at Syracuse University has announced that Dr. Bengt Leopold has been appointed director of the Empire State Paper Research Institute and professor of pulp and paper technology.

Dr. Leopold is Swedish-born and educated and comes to the college from The Mead Corp., Chillicothe, Ohio. He was senior chemist for the Columbia-Southern Chemical Corp., Barberton, Ohio, from 1952 to 1953.

From 1953-1958, he served as division manager for Industrial Cellulose Research, Ltd., Hawkesbury, Ont. From 1958 to the present time, he has been group manager and then associate director of research for Mead where he has directed the basic research section which is concerned with fundamental research on fibers, pulping, bleaching, analysis and polymers.

At the College of Forestry, Dr. Leopold will direct the Empire State Paper Research Institute (ESPRI), a research organization consisting of a team of 10 researchers jointly sponsored by the College of Forestry and the Empire State Paper Research Associates, Inc. (ESPRA). ESPRA is a non-profit organization consisting of leading pulp and paper companies in the United States, Canada, Australia and seven different European countries which has continuously sponsored research at the Syracuse Forestry College since 1945.

Hudson Appoints Three at Palatka

Hudson Pulp and Paper Corp. has announced three appointments at its Palatka mill.

M. H. Fearing has been appointed to the newly created position of assistant superintendent, kraft converting.

A native of Ashland, Ky., Mr. Fearing is a graduate of the University of Cincinnati. Most recently he has been associated with a food processing company. Prior to that time, he had been an industrial engineer at Hudson.

J. A. Rogers has been appointed assistant chief electrician.

A native of Greenville, Ala., Mr. Rogers joins Hudson after many years of electrical supervisory experience with the Davis Mechanical Contracting Firm.

A recent addition to the Control department is Robert Kane who becomes supervisor of the Data Processing department. A graduate of Armstrong College, Mr. Kane comes to Hudson from Stockton Whatley, Davin & Co. of Jacksonville.

Lord Elected President Of John Carter Company

At a recent meeting of the board of directors of John Carter and Co., Boston, Philip H. Lord was elected to succeed Albert P. Carter as the company's president. Mr. Carter, former president and son of the company's founder, was elected chairman of the board.

Mr. Lord joined the century-old paper merchant firm in 1951 and, six years later, was appointed vice president and sales manager.

Other officers elected were Leon M. Poore, treasurer and general manager; Warren C. Bois, assistant treasurer and clerk, and Richard C. Rogers, assistant general manager.

R. J. Diaz

Westvaco Names Diaz Mill Supt. at Charleston

West Virginia Pulp and Paper Co. has announced that Richard J. Diaz has been promoted to the position of paper mill superintendent at the company's Charleston plant. Mr. Diaz came to the Kraft Division in 1956 as an engineer and assisted in the development of the company's stretchable Clupak paper. In 1958, he transferred to the Paper Mill department as a machine engineer and was promoted to machine supervisor in 1959. In his new job he will be responsible for the operation of all three of the mill's paper machines.

Replacing Mr. Diaz as supervisor of the plant's No. 3 paper machine is Edward R. Mappus. Mr. Mappus joined West Virginia in 1955 as a staff assistant in the Maintenance department. After tours in other maintenance department jobs, he was promoted to operating engineer of No. 3 machine in 1959. His present promotion gives him complete responsibility for No. 3 machine.

Elwood Joins N. C. State School of Forestry Faculty

A world-renowned scientist has been named professor and head of the Department of Wood Products in the School of Forestry at North Carolina State College.

The announcement of the appointment of Dr. Eric Louis Ellwood, a native of Melbourne, Australia, was made by Dr. Richard J. Preston, dean of the forestry school.

In his new position, Dr. Ellwood is responsible for the School of Forestry's undergraduate curricula in pulp and paper and wood technology and all graduate programs in wood products. In addition, he is director of the Wood Products Laboratory and is responsible for the college's research in wood and paper. He is also in charge of the Wood Products extension program.

An authority in his field, Dr. Ellwood came to State College from the Forest Products Laboratory at the University of California at Berkeley. At the California university, he was a wood technologist and lecturer. His duties there also included research in timber physics, work in cooperative industrial problems, and graduate student instruction.

Prior to becoming a member of the University of California faculty in 1957, Dr. Ellwood held responsible positions in the field of forestry in Australia.

International Names Manager of Personnel

International Paper Co. has appointed Joseph P. Hunt manager of personnel and office services for the New York office.

In assuming these duties, he will succeed Frederick A. Auffermann, Jr., assistant secretary, who has been in charge of the New York office personnel department for many years. Mr. Auffermann has been assigned special duties for the executive staff.

A graduate of New York University's School of Commerce, Mr. Hunt has served on the treasurer's staff since 1950 when he joined the company.

OBITUARIES

David F. Lawler, for many years a representative of the Asten-Hill Mfg. Co. in the New England area died recently after a long illness.

Martin J. O'Leary, 68, technologist in the Paper Section of the National Bureau of Standards, Washington, D. C., died October 2. Mr. O'Leary had served the Government for 33 years, having joined the Bureau staff after 20 years of experience in the paper industry. The author of 14 scientific publications, he was well known for his research on techniques for manufacturing new types of papers, especially those made entirely from glass fibers. Mr. O'Leary had received many awards and commendations for superior performance, including the Department of Commerce medal for meritorious service.

SF NEWSLETTER

THERE ARE SOME AIR DRYING PROBLEMS SF DOES *NOT* HANDLE

But in every *industrial* application, you'll find SF air-handling products in use. Typical of these products are the *SF Flakt Dryer, Type L,* which cushions the drying sheet on a bed of air. No mechanical conveyors are needed, thus providing the gentlest possible handling of the sheet, with ensuing economies.

SF Axial Flow Fans give the utmost in regulation economy. Their patented design features include impeller blades that can be adjusted for pitch during operation. They can move up to 600,000 c.f.m.

A small size facility for air and temperature control in constant humidity rooms is provided by the *SF Type KDEB Air Conditioner* (3'5"l. x 2'10" w. x 2'3" d.), which regulates temperature and humidity in areas up to 2500 square feet automatically.

These are typical SF Air Handling products. Specific information regarding your particular application may be obtained by contacting:

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PJT NEWS OF CONVERTERS

Fiber Box Shipments Breaking All Records

Fiber Box production is presently breaking all previous records and shipments in August alone were better than 10 per cent higher than all production reported by the Federal Reserve Board, Jerome H. Stone, vice president, Stone Container Corp. and president, Fibre Box Association, told 300 corrugated box manufacturers assembled in New York City at the association's 22nd Annual Meeting.

Despite the high demand for boxes the industry faces several problems Mr. Stone declared. "In a technological industry such as ours, we still lag behind general productivity by an ever widening margin." Research and development must be increased for the industry to continue its past growth patterns. "This is a fast moving world, and we had better be in tune with Rock'n Roll rather than the Vienna Waltz," Mr. Stone said.

"We are now at a new plateau in our industry. I urge now that we look back at the past, but that we also roll up our sleeves to the future. We will thus move forward by stressing our capacities rather than our limitations, our hopes rather than fears, our dreams rather than our failures, our fulfillments rather than our frustrations," he concluded.

Tabulating Card Plant Opens in Detroit

Opening of a new facility of the Hackett tabulating card manufacturing and sales organization in Detroit, Mich., was announced by Joseph J. Hackett, president of the J. J. Hackett & Co., which also has plants in Chicago and Cincinnati, Ohio.

Mr. Hackett said the new plant at 1560 Clay, Detroit, would enable the company to provide wider mid-western coverage for its data processing customers.

American Envelope Buys Two Converters

American Envelope Co., Chicago, has announced the acquisition of two envelope manufacturers, Commercial Envelope Corp., Baltimore, Md., and Washington Envelope Co., Washington, D. C.

White To Retire From Container Corp. Post

Ralph E. White will retire December 31 as vice president of Container Corp. of America after 38 years of service with the company. Until his retirement, Mr. White will continue as division vice president in charge of the company's shipping container operations at Cincinnati, Ohio, and Anderson, Ind.

Custom-Made Paper Bag Names Manufacturing Mgr.

E. L. Powell has been appointed manager of manufacturing by Custom-Made Paper Bag Co., Inc., of Long Island City, N. Y.

Mr. Powell held a similar responsibility at Sonobond, Inc., Westchester, Pa. Previously, he was superintendent of manufacturing planning for the Air Conditioning Division, Westinghouse Electric Corp.

Mid-West-Pak Fills Key Management Posts

Selection of three men for key management positions at Mid-West-Pak Corp., Belvidere, a subsidiary of Champion Papers, Inc., has been announced. At a recent meeting of the Mid-West-Pak directors David T. McLaughlin was elected president and a director of the subsidiary firm. Robert A. Claridge has been named production manager, and Joseph E. Giordano, general sales manager.

PSSMA Elects Officers At Annual Meeting

Bernard W. Recknagel, vice president, St. Regis Paper Co., was elected president and F. Gregg Bemis, chairman, Bemis Bro. Bag Co., was elected vice president of the Paper Shipping Sack Manufacturers' Ass'n., Inc., at its 28th Annual Meeting recently held at The Greenbrier, White Sulphur Springs, W. V.

Elected to the board of directors, were: F. G. Bemis, Bemis Bro. Bag Co.; T. W. Brown, Jr., Owens-Illinois; J. R. Clements, Raymond Bag Corp., Div. of Albemarle Paper Mfg. Co.; H. Holden, Kraft Bag Div. of St. Marys Kraft Corp.; W. L. Jennings, West Virginia Pulp & Paper Co.; E. K. Ludington, Jr., Chase Bag Co.; G. D. Morgan, Jr., Seaboard Bag Corp.; H. M. Recher, Union Bag-Camp Paper Corp.; B. W. Recknagel, St. Regis Paper Co.; A. A. Scholl, International Paper Co., Bagpak Div.

Frank Pocta was re-elected executive secretary and treasurer.

"Guess who?"

NEW EQUIPMENT & SUPPLIES

Valve Has Teflon Capsule Molded Around Metal Ball

Major design feature of a different concept in ball valves is a "sealing capsule" of conical-shaped Teflon which is molded around a ball that controls the on-off action of the valve. The one-piece conical sealing capsule and spherical metal ball are responsible for the name, "Con-O-Sphere," according to W-K-M division of ACF Industries, Inc., manufacturers of the valve.

The Con-O-Sphere has but seven parts, the sealing capsule with its integral handle stem, the valve body, handle, Teflon stem seal (a small washer), a screw-in base plate, lock nut and set screw.

The sealing capsule is a conical-shaped Teflon unit that contains the metal ball, much as a yolk is contained within the white of an egg. The one-piece ball and stem are heat-pressure molded within the Teflon block and the valve requires no lubrication because of the Teflon construction. Clearance between the ball and the encapsulating seal is said to be microscopic and so slight as to prevent any leakage.

Only one adjustment, performed in the line without shutdown by turning the screw-in base plate, is necessary to provide a positive seal within the valve. A turn of the base plate forces the conical-shaped sealing capsule into increasingly tighter contact with the smoothly-finished valve body. It also activates the Teflon gasket which serves as a stem seal. Thirdly, the compression of the Teflon from below brings it into even greater contact with the metal ball.

The life of the Con-O-Sphere is "indefinite," depending upon the type of service it experiences. A test valve in one plant has successfully undergone 500,000 cycles of usage with no deterioration of the valve.

In the event rebuilding of the valve is required, the entire operation may be performed in the line in approximately three minutes. Removal of the base plate and handle allows the sealing capsule to drop out of the body. A simple replacement of the capsule and a new stem seal completely rebuilds the valve.

The Con-O-Sphere now is being manufactured in sizes ranging from one-eighth to two inches and in a working pressure range from vacuum to 1500 p.s.i. and is available in a number of metals including ductile iron, carbon steel, bronze, aluminum and several stainless steel alloys. It is available with screw, flange or weld ends and may be installed in any position. Small sizes have tapped holes for instrument panel mounting. W-K-M Division, ACF Industries, Inc., P.O. Box 2117, Houston 1, Texas.

Offers Versatility In Web Coating

Use of a single machine for various types of web spot coating and for single color roto-gravure printing is possible with an automatic Model GC Single Roll Gravure/Printing Machine, states Potdevin Machine Co.

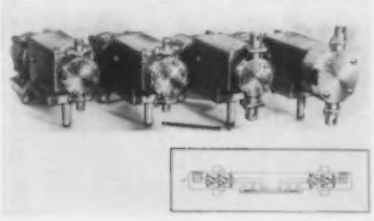
Besides being fully automatic, the machine is internally automated so that it will operate only when its various components are in proper operating order. This eliminates the possibility of web waste due to malfunction of any part of the machine. Individual controls detect web break, phasing and temperature (up to 350°F.).

The Potdevin Model GC has its impression throw-off arranged in such a manner so that no web slack occurs even in the thrown-off position. The oscillating doctor blade insures precise coating control and the open end style of the new Potdevin machine makes it readily accessible and easily threaded.

The machine accommodates paper and packaging film webs up to 12-inches wide with a maximum pattern repeat of 20-inches. Additional information, Potdevin Machine Co., 285 North Street, Teterboro, N. J.

Integral Metering Head For High Temperatures

A metering pump reagent head assembly with a diaphragm of stainless steel has been announced by the



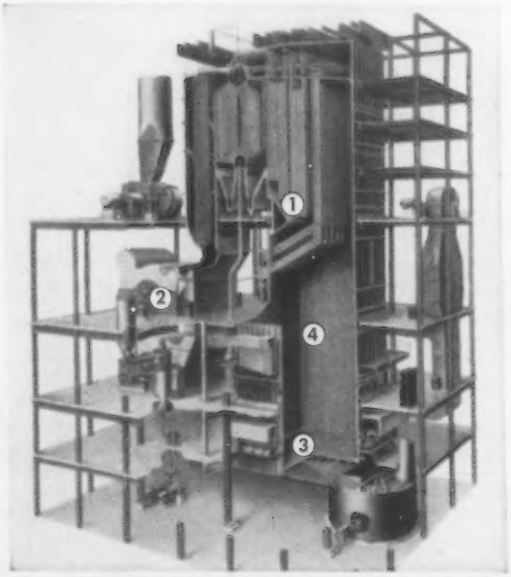
Process Equipment Division of Lapp Insulator Co. The new design offers two outstanding advantages: (1) it raises the operating temperature limit from 160°F. to 212°F. and allows short periods of steam sterilization; (2) it eliminates the need for remote head construction.

The all-metal reagent head mounts directly onto the gear box of any Pulsafeeder Microflo metering pump. Previously, for operating temperatures over 160°F. remote head assemblies with metal diaphragms have been used. The remote construction was also used for handling products

(Continued on page 63)

The Tacoma mill of St. Regis Paper Company.

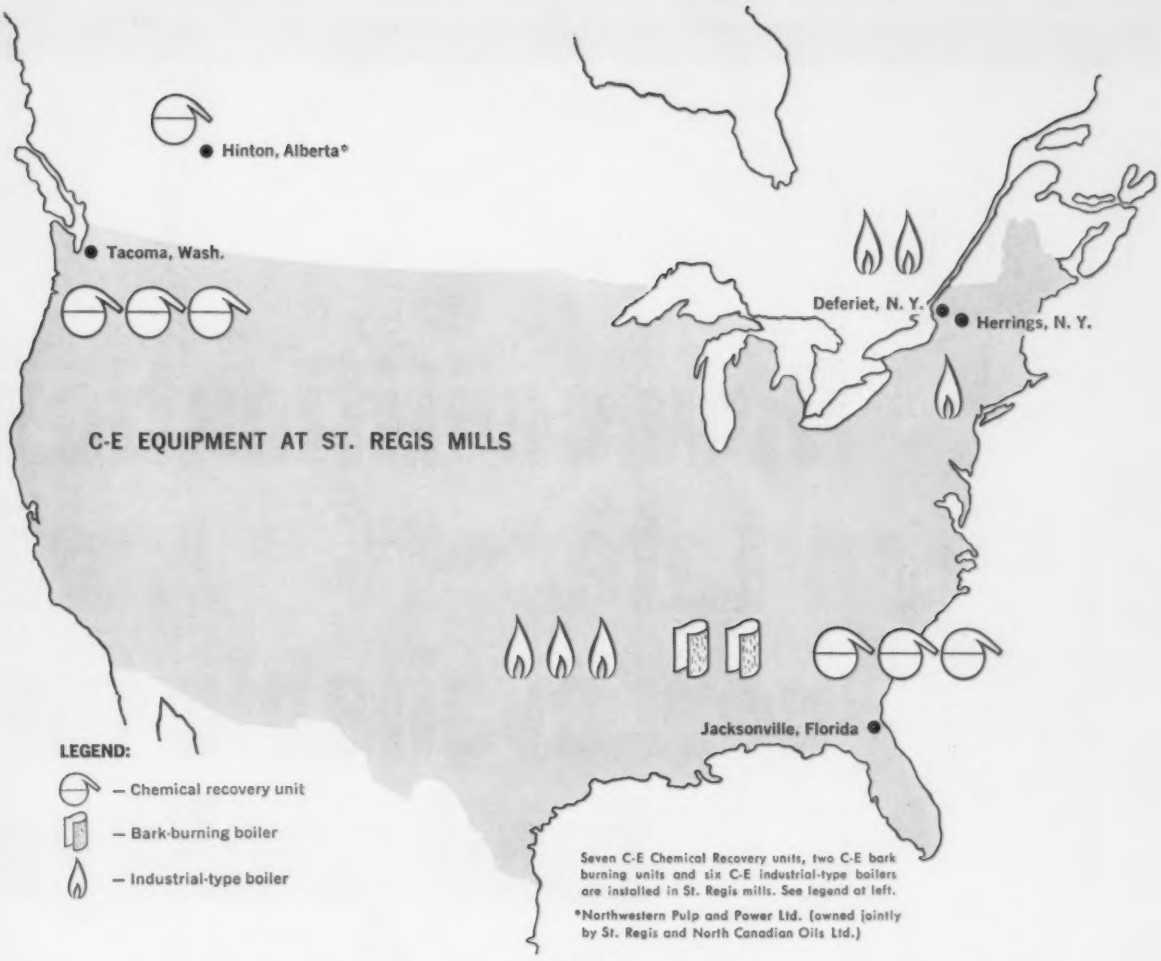
INSTALLS ITS SEVENTH AND LARGEST



Advantages of the C-E Recovery Unit

1. **TANGENT-TUBE CONSTRUCTION** of screen and superheater sheds slag which falls directly to furnace floor. Gas flows freely, at low velocities — giving lower draft loss.
2. **CASCADE EVAPORATORS** require a minimum of power and maintenance. Dependable, low-cost chemical collectors and liquor concentrators contribute to furnace stability.
3. **WATERCOOLED DECANTING HEARTH** protects floor refractories from erosion with a layer of chilled slag. Hearth maintenance is eliminated.
4. **TANGENTIAL SECONDARY AIR** gives gases a spiraling, turbulent motion, causing good mixing and longer gas travel in furnace. Rapid, complete combustion reduces unburned char leaving furnace zone.

ALL TYPES OF STEAM GENERATING, FUEL BURNING AND RELATED


Hinton, Alberta*
Tacoma, Wash.
Deferiet, N. Y.
Herrings, N. Y.
C-E EQUIPMENT AT ST. REGIS MILLS
Jacksonville, Florida
LEGEND:
— Chemical recovery unit
— Bark-burning boiler
— Industrial-type boiler
Seven C-E Chemical Recovery units, two C-E bark burning units and six C-E industrial-type boilers are installed in St. Regis mills. See legend at left.
*Northwestern Pulp and Power Ltd. (owned jointly by St. Regis and North Canadian Oils Ltd.)

C-E CHEMICAL RECOVERY UNIT

Combined capacity of recovery units: 2,400 tons

As part of the thirty-million-dollar expansion of its Tacoma mill, St. Regis Paper Company recently started up its seventh and largest C-E Chemical Recovery Unit.

The seven-story boiler is designed to burn 1,400,000 lb of dry solids daily and has a steam capacity of 225,000 lb/hr. This is the third C-E recovery unit for the Tacoma mill. At other St. Regis mills there are installed six industrial-type boilers and two bark-burning units. Total steam capacity of all units exceeds 2,000,000 lb/hr.

St. Regis' choice of C-E equipment is typical of C-E's many repeat sales to leading pulp mills. It is the result of satisfaction with the advanced design, reliability and economical operation of C-E products. For example, since the development by C-E of the watercooled decanting hearth in 1951, the more than 60 recovery units C-E has built have been free from hearth maintenance – formerly a common cause of shutdown.

For interesting details on the high availability and savings in operating cost offered by C-E recovery units, call the C-E office nearest you or contact the General Sales Division in Windsor. C-336

COMBUSTION ENGINEERING

General Offices: Windsor, Conn. • New York Offices: 200 Madison Ave., New York 16, N. Y. • Canada: Combustion Engineering-Superheater Ltd.

EQUIPMENT; NUCLEAR REACTORS; PAPER MILL EQUIPMENT; PULVERIZERS; FLASH DRYING SYSTEMS; PRESSURE VESSELS; SOIL PIPE

Dow certification on Latexes 630 and X3352 now available for food package applications

New regulation issued by FDA shows these latexes are in compliance with 1958 Food Additive Amendment

Dow can now furnish paper and paperboard manufacturers with Latexes 630 and X3352 which comply with requirements for direct food contact.

Dow Latex 630 offers exceptional starch compatibility, excellent mechanical stability, and outstanding pick resistance. It can provide packagers with superior printability, paper and paperboard that permit clear, sharp, true-to-life reproduction. Its cost is low, its quality high.

Dow Latex X3352 is a low-odor latex which develops excellent printability and ink holdout, good gloss and brightness, and excellent foldability in coated paper and paperboard. Mechanical stability on various coating machines is excellent.

For full information on these or other Dow latexes for coating applications, call or write your nearest Dow sales office.

THE DOW CHEMICAL COMPANY DOW Midland, Michigan

"DE SCHOOLMEESTER," Westzaan, Holland

RAG-CUTTER-STAMPER, tub revolves continuously. Note knives which strike down with considerable force.

270 Year Old Paper Mill

Powered by Wind and Gas

Unique Dutch mill still operates with many items of the original equipment. An on-the-spot and into-the-canal report by our European editor.

Ernest F. Barker,
European Editon,
Paper Trade Journal

A short, pleasant drive north-west from Amsterdam, to the friendly little Dutch village of Westzaan, gets you into the windmill country. Here, plenty of windmills, which are disappearing so rapidly from other parts of the Dutch countryside, remain, pumping water, grinding grain, etc.

One of them still helps make paper!

This particular paper mill is reached easily by highway, just a mile out of Westzaan. When the wind is right (as it is most of the time) its huge wings beat a steady, noiseless rhythm to provide power for one of the world's most incredible paper mills, "De Schoolmeester" (The Schoolmaster). Now owned by the Dutch Papermills Association, this historic mill still makes and sells paper.

It is Holland's last wind operated paper mill and most likely also the last of its species anywhere.

De Schoolmeester is at least 270 years old. It has an ancient fourdrinier paper machine and two men operate the entire mill. The windmill powers the entire paper mill with the exception of the paper machine, which is gasoline engine driven.

The Dutch Papermill Association acquired the mill in 1957 from the de Jong family of Westzaan, after it had been in this family for generations.

The de Jongs, with their years of experience in operating it, were then asked to continue to do so under a one guilder a year lease arrangement. This they continue to do today, as a hobby-type side line to their modern paper converting operation, Gebroeders de Jong, in Westzaan. And with this arrangement the mill's continued life is assured, as a historical monument of papermaking. But monument or not, De Schoolmeester is still an operating paper mill, making and selling a line of unusual specialty grades. Here are the details.

History

The exact start-up date of this historic mill is uncertain. Most evidence points to 1693 but some reports set the date earlier, back to 1618. The de Jong family acquired the mill on April 1, 1852. The name evidently developed from the fact that one of the original partners was a school teacher.

Competition dates way back at this mill. Usually, in those days, windmills had eight sides. But efficiency studies by power plant engineers of that period eventually showed that a mill with only six sides would turn faster and consequently deliver more power. This mill happened to be one of these later models which gained it the unflattering title "Gauwdief" (Sneakthief) from conservative competitors in the vicinity.

Undaunted by such mud slinging from the competition, the mill management kept the facility up to date. As a consequence, De Schoolmeester's history is really nothing but a chronicle of continuous mill modernization, from start-up to the present. (Editor's Note: There is little reason to doubt this statement, because this plant is today the world's most modern wind driven paper mill.)

The de Jong family figures prominently all through the most important years of this historic paper mill. Grandfather de Jong is probably the most outstanding figure among them. He can only be described as a Dutch Scotchman. One day, in a special fit of economizing, he furnished the beaters with the family archives.

Here is a story in a lighter vein. European Editor Barker recently visited a Dutch mill, said to be the world's last wind powered paper mill.

Our European Editor writes: "Any papermaker visiting this mill will never forget it. It has an inimitable charm and touring it is like opening the pages of a history book. The mill is primitive but it operates commercially. Its fourdrinier machine makes and sells a technical specialty grade."

But rather than talk about history and charm, Mr. Barker decided to treat this mill as just another plant, and to present this story in Paper Trade Journal's usual style of describing a mill for practical papermakers. The result is an amusing study of an old, unusual mill seen through the eyes of the modern papermaker and judged by standards of modern mill practices.

(Shades of Egyptian mummy-wrappers paper!) It so happened that his less Scotch and more Dutch son, more inclined to set heritage above crass commercialism, retrieved one still intact book (dated 1799) just as it was about to disappear beneath the beater roll. This irreplaceable family record exists today and helped in preparing this article.

In 1948 great grandfather Gerbrand de Jong sent a letter to all papermakers in Holland, warning them of the advent of mechanical papermaking. At about the same time he started a converting business making bags from the paper supplied by his mills. This operation was eventually separated from the papermaking end of the business and as such it grew and developed into N.V. Papier en Papierwarenindustrie Gebroeders de Jong of Westzaan. This modern converting plant is now one of Holland's largest producers of paper bags and rolls for automatic food wrapping. And although De Schoolmeester still continues to produce paper, it no longer furnishes its production to the converting plant.

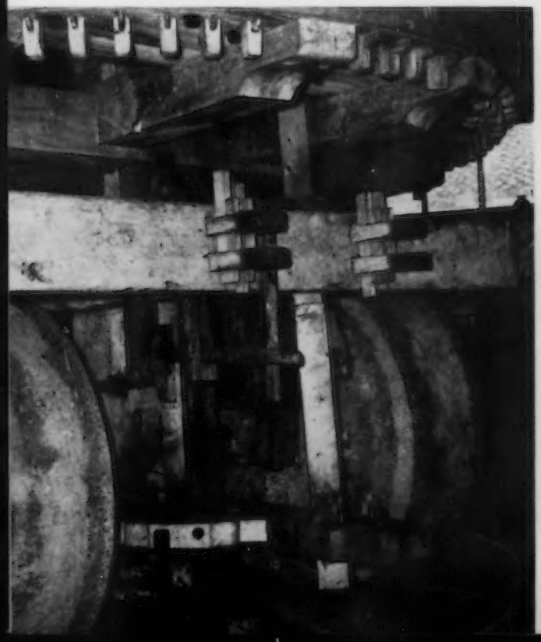
In 1960 the Koninklijke Papierfabrieken Van Gelder Zonen N.V., Holland's largest paper mill group, acquired a controlling interest in the de Jong converting plant.

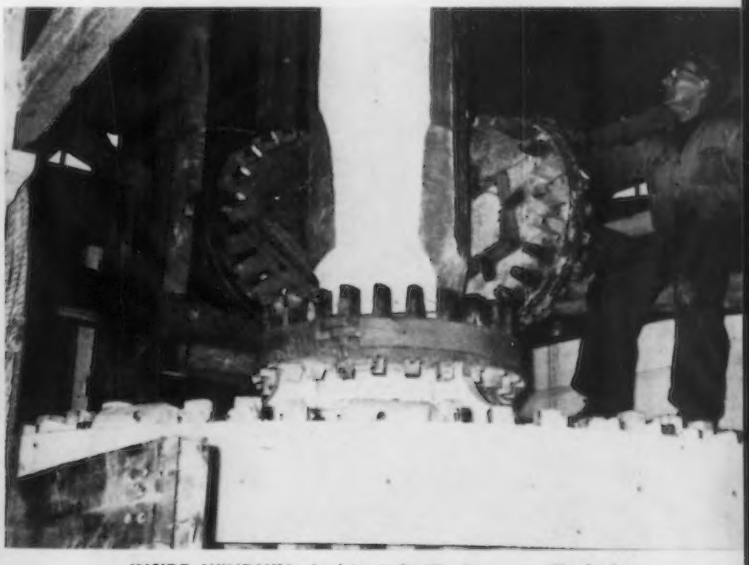
A Specialties Mill

De Schoolmeester was originally built to make wrapping grades. Today it produces specialties. The mill's prime specialty is its well-known mosspaper. This grade has a standard furnish of 90 per cent peat moss and 10 per cent rags, and has substantially contributed to the mill's high reputation. Heavily impregnated with tar, this grade today still finds an important application in hydraulic works because of its great waterproofness. As is a well-known fact, the Dutch have many watertight doors because of their dykes. De Schoolmeester's "Mospapier" is still used today between sluice gates and even in the Dutch navy's doors.

Another grade manufactured regularly at the mill is an extra stiff bookbinding board, used in folders, books and many a Dutch bible. This

WIND-POWERED KOLLERGANG showing typical power transfer "gears" used throughout the mill.





INSIDE WINDMILL Assistant Booij sits on mill shaft ledge to show comparative size of main shaft column and power transfer wheel.

NO. 1 PAPER MACHINE wet end view.

is a 100 per cent rag content grade with resulting outstanding bending quality.

Mill Personnel

This particular paper mill is operated with a minimum of personnel, the dream of mill managements everywhere.

Two men, highly skilled by years on the job, run the entire mill. Its keyman has no counterpart in any other mill. His job title is "Miller" and his job description is as long as De Schoolmeester's payroll is short. The Miller doubles as power plant engineer, rag cutter operator, beaterman, machine tender, cutter and supercalender operator, as well as laboratory technician. He is Teun op der Heijde, a tall, jovial man who loves his job and "his" mill and who has a 25-year service record.

The Miller is assisted by 70-year-old Berend Booij, assistant power engineer, backtender, maintenance man, general handyman and the Miller's companion extraordinaire. De Schoolmeester's management talent continues to be provided by the de Jong family: Gerbrand de Jong, president of the converting firm in Westzaan, and his cousin, Co de Jong, vice president.

Windpower

The mill's power source, wind, is unquestionably one of the most economical of nature's energies utilized by man. It is cheap, reasonably quiet and relatively easy to harness. There are few disadvantages. The most notable of these is that you sometimes have to wait for it. Abundance and availability of this source of power varies geographically. In "low countries" it is more abundant than in some other parts of the pulp and papermaking world.

At De Schoolmeester, wind availability and intensity continue to figure importantly in production scheduling. During high wind periods, the mill concentrates on rag pulping, because the rag cutter and stamper requires most power. (The dry-cut rags are stored for use during periods of lower wind intensity, at which time the men switch hats and concentrate on papermaking.)

A careful analysis of past mill records shows that production scheduling can count on adequate wind availability two-thirds of the time.

WIRE AND HEADBOX. Assistant checks slice and sheet formation.

THE MILLER WATCHES SHEET build up. At correct sheet thickness, he "cuts" the web and . . .

Downtime a Problem

Downtime, the scourge of mill profitability, is also a problem at De Schoolmeester. One compensating factor here is, however, improved predictability. This Dutch mill simply shuts down all winter long. The major reason for this is frozen water supply. The water in the canal, the wells and inside the unheated mill (including the stock chest) freezes during the relatively harsh Dutch winter months, and does not thaw again till spring.

The Mill ("Wind," that is)

De Schoolmeester's windmill power plant delivers between 200 and 300 h.p., which is quite adequate for most of the mill's (paper mill, that is) requirements. Among its advantages are: Economy, low maintenance requirements, no corrosion or lubrication problems (all wood construction), almost complete self-sufficiency while operating, and cleanliness plus absence of noise. (The absence of fly ash and noise are important favorable factors in community relations, PR men will be quick to agree.)

Like in everything else, there are, however, also some disadvantages. One is that in this particular installation, maximum 300 h.p. delivery is reached only when there is a really strong wind. Another is that a sudden major change in wind intensity or direction invariably means that the power engineer must quickly climb to the top of the unit (three floors) to make necessary adjustments.

With one of its wings extended vertically, the Schoolmeester's power plant measures 46 feet from ground level and it is thus by far the highest part of the mill buildings.

Average wind intensity in De Schoolmeester's neighborhood is 3.0. At this wind intensity the rag cutter can be used effectively, but at a sacrifice to operating the beaters. Without the ragcutter, the three beaters (requiring 35 h.p. each) can also be operated at this wind intensity. A wind force of 7 is the maximum the mill can use. A stronger wind usually means a shutdown dictated by safety considerations.

All moving parts in the windmill, as well as the structure itself, are made of wood. Power is transferred to the wooden drive shafts and leather belts in the papermill with a series of huge wooden cog wheels. These are well fitted and windmill proponents say there is less power loss due to friction than is commonly believed.

The windmill's main vertical line shaft which extends from the roof (where the windmill wings run) to the main operating floor, is a colossal 30 inch diameter wooden beam. This shaft, like most of the windmill's other interior power transfer equipment, is the original unit installed about 270 years ago!

Water (and a personal note)

De Schoolmeester draws its water from wells adjacent to the mill buildings. The mill is sandwiched between an old canal, so common to Holland, on one side and a modern highway on the other. The canal is no longer used and a large section of the canal is completely covered with lush vegetation. Thus, the water surface blends right into the adjacent meadows, making it practically impossible to tell where ground ends and the canal starts, even when standing at the gradual slope of the water's edge.

Herein probably lies one of the canal's few remaining useful purposes—to discourage unguided visitors. Unguided and intent on photographic chores on Sunday afternoon (day before the mill visit) PAPER TRADE JOURNAL almost went out of business in Europe at this point. Long minutes of embarrassed scrubbing of shoes and trouser legs covered knee-deep with an inch-thick coating of heavy mud, were the result of this solitary preview mill inspection. This amid the riotous catcall of Sunday drivers who had stopped above, on the highway also to take pictures, but who now preferred just to watch the antics of their fellow photographer stuck in the mud down below.

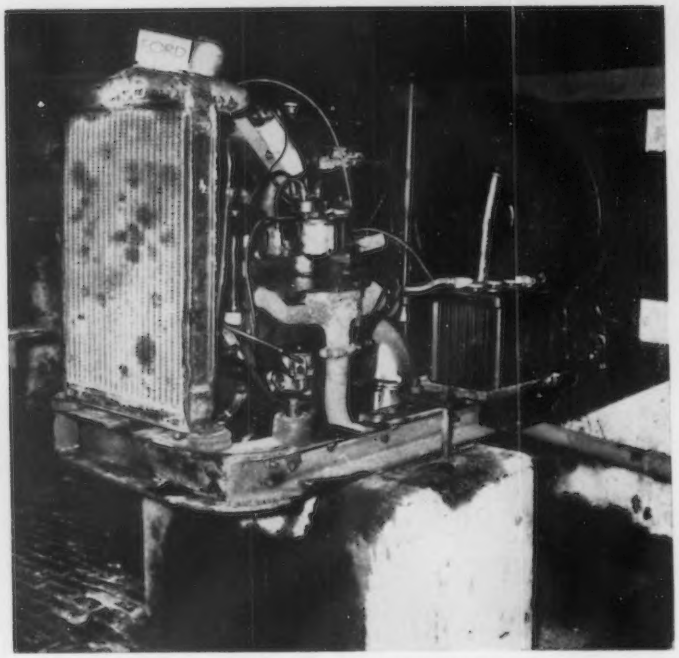
Stock Preparation

Incoming rags are sorted and reduced to a fibrous state by a dry cutting and stamping process. The rags

. . . LIFTS THE SHEET from the couch and places it in a pile for pressing.

WET PRESS and pressing operation. Water removal depends on operators mood and breakfast.

VP Co de JONG (who showed us the mill) checks sheet basis weight.



PAPER MACHINE'S PRIME MOVER, Ford automobile engine. (Note starter battery at right of motor)

are fed into a man-sized round wooden tub which turns continuously during the cutting process. A bank of four vertically mounted steel knives continually drop into the rags stamping and cutting them with such force that each knife ascent produces a gunshot-like report. This is also a windpowered operation in which the knives are arranged in alternating pairs—i.e. the first and third knives are in the downstroke while numbers 2 and 4 are rising and vice versa. It takes about three hours to produce 130 pounds of stuff with this historic cutting device. After cutting, this stuff is stored until needed in the beaters.

Old hemp rope is treated identically but it is, of course, cut separately. The third material, peatmoss, requires no pre-cutting and can therefore be furnished directly into the beaters.

The mill's beater room is equipped with three standard Hollander beaters, of 100-pound capacity. Each beater load produces 82 pounds of finished paper, which means that De Schoolmeester has an overall process shrinkage of 18 per cent.

The Paper Machine

De Schoolmeester's No. 1 paper machine has a conventional four-drinier-type wet end. It "stops" abruptly at the couch roll. There are no presses and no dryers on this machine.

The machine wet end specifications are as follows: Wire width, 43 inches; wire length, 105 inches; table, horizontal; shake, none; headbox, open type; table rolls, 7; breast roll diameter, 8 inches; couch roll diameter, 16 inches; machine speed, 30 f.p.m. (estimate); annual production, one ton (average).

The paper is couched off manually from the top couch roll. This is accomplished by "cutting" the wet web as it winds around the roll. A bone tool is used to accomplish this, by running it quickly down a quarter inch deep indention which extends along the entire face of the roll.

Sheet weight is controlled accurately by the number of plies which build up on the roll. "Cutting" permits grasping the resulting sheet at one edge, lifting it from the roll and thus permitting it to unwind itself from the roll. The wet paper is then hand transferred to a pile in which a piece of wet felt is inserted between each 30 sheets.

As can be readily seen, certain major equipment investment economies have been realized in this mill. For example, rather than sheet the web after drying (a commonly accepted method these days) it is sheeted immediately after the wire, when it is obviously much easier to do so because of greater sheet pliability. This in turn means that there are no knives to grind (the knife at the couch roll is dull) and consequently there is no possibility of slitter dust complaints from customers. In addition, there is no dry end broke to bother with, no expensive rewinding equipment and other, equally obvious advantages in this type of machine design.

White Water

This Dutch mill is in the enviable position of having no stream pollution problems. First, there is no stream to pollute—only the canal. Second, the "canal pollution" is of little consequence because it is in private mill property. Finally, the white water has a relatively low BOD value. (There are no starches, resins or other additives.)

Paper Machine Drive

The paper machine's prime mover is also unusual. The machine is driven by a Ford gasoline engine. It is a standard four-cylinder, water-cooled automobile engine, from a 1930 Ford.

Now driving the Schoolmeester paper machine, the little engine is still equipped with its original self-

starter, a six-volt wetcell car battery and standard automotive clutch. The engine drives the paper machine and transfers stock from the stock chest to the headbox, by means of an ingenious stock transfer system consisting of a wheel equipped with cups which continually scoop stock from the chest and then spill their contents into the headbox as the wheel turns.

Gasoline power has proven itself to be quite economical at this mill. The engine uses about 2½ gallons of "Regular" per operating shift.

PARTIAL VIEW of mill buildings with main power plant at rear.

"Press Section"

In the conventional sense, there is no press section. The sheets are hand pressed in stacks between two movable plates. The top platen moves down as a vertical screw column is turned.

The paper remains in the wet press over night, in the same one-wet-felt-for-every-30-sheets stack assembled at the paper machine. "Amount of pressure depends on what the miller had for breakfast," Mr. de Jong told PAPER TRADE JOURNAL, with a straight face, as he showed us around.

"Drying Section"

On visiting their first paper mill, laymen are often heard to remark on how much space is devoted on the machine "just to dry the paper" after it has been made. This Dutch mill is no exception. About two-thirds of the mill's overall length is reserved for drying.

Drying paper at De Schoolmeester is basic but effective. After pressing, the sheets are individually hung on special ropes, row on row. Rather than rely on the highly mechanized method of steam drying in the machine, De Schoolmeester again draws on wind as its drying medium. Slat-like apertures, placed all along both sides of the 240 foot long, low-slung, one story drying section, are opened or closed according to drying requirements.

The "carrier ropes" used here are called fig ropes. They are made of a special fiber and have a very smooth surface. This is important in avoiding sheet surface marking. Drying time varies considerably, depending on relative humidity and wind force. Sometimes it takes only a day to get the sheets dry. But there have also been times when three to four weeks of waiting were necessary.

DRYING LOFT. (Drying takes between 24 hours and a number of weeks, depending on atmospheric conditions.)

The Finishing Department

After drying, the sheets are again stacked and placed in a dry press (same type as the wet press, already described.) This eliminates sheet curl, buckles, etc.

A supercalender is next. This stack is wind powered, has two wooden rolls and the sheet is fed through the nip from one to five times, depending on the desired surface finish. (Nip pressure is adjusted manually by means of a screw and therefore also depends somewhat on breakfast.)

Press Felts and Water Removal

Part I. Dynamics of Water Removal

There is, perhaps, a better fundamental understanding of events in outer space than of the happenings in the press nips of high speed paper machines.

Dan B. Wicker,
Vice President,
Research & Development,
Huyck Felt Co.

The static pressing of newly formed paper was abandoned with the introduction of fourdrinier and cylinder machines over a century ago. However, since that time only limited attention has been given to the dynamic principles involved in extracting water from a moving sheet on a paper machine. There is, perhaps, a better fundamental understanding of events in outer space than of the happenings in the press nips of high speed paper machines. Hansson (1) and particularly Wahlstrom (2) have contributed much by measuring the effects of varying press operations on felt and sheet dryness. Wahlstrom systematized his findings by preparing plausible theories based on his work, but joined most other press investigators in pointing out the almost total absence of fundamental knowledge in this field. Those who have sought such information are aware that very little has been published on the dynamic and viscoelastic properties of wet fiber sheets and felts.

In 1959 Huyck Felt Co.'s research program was oriented to fill this void. Here scientists and engineers, highly qualified in the field of fluid dynamics, were assigned the task of verifying existing assumptions and developing basic criteria for evaluation of press operations. Since that time much has been discovered of a fundamental nature.

Practical Background

Despite a widely accepted belief that a more open felt texture will provide better water removal, papermakers have long recognized that newly installed felts do not immediately provide optimum water removal performance. Rather, they require a break-in period varying from a few hours to a few days to achieve best results. The engineer-

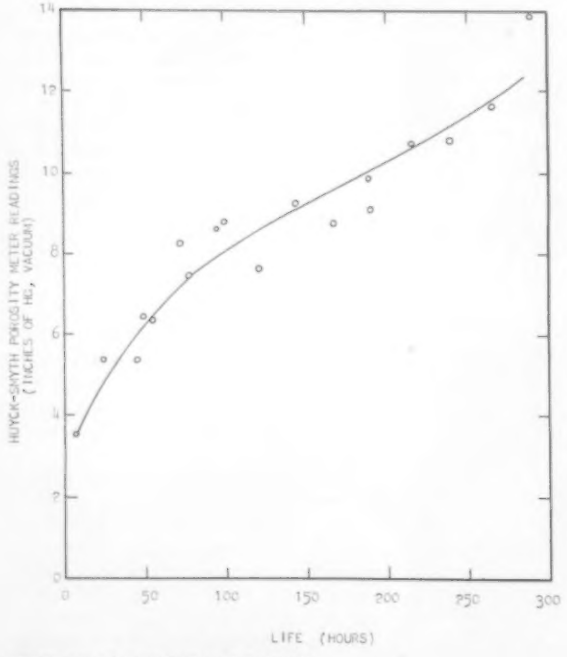


FIGURE 1. FELT LIFE VS. POROSITY

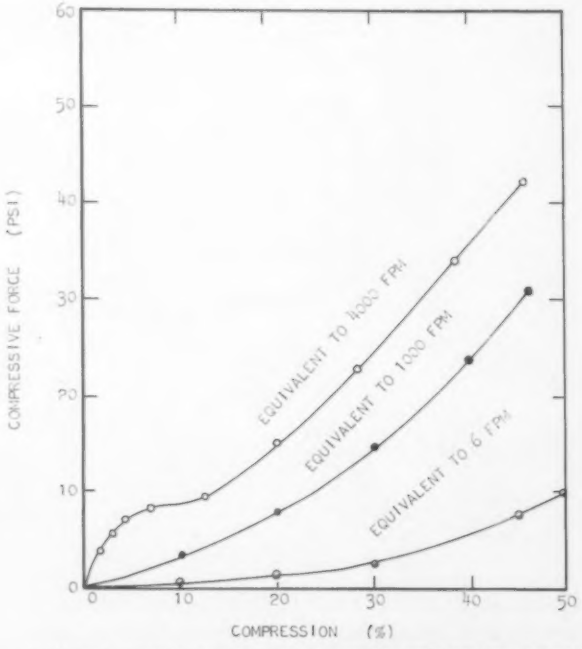


FIGURE 2. EFFECT OF LOADING RATE ON FELT COMPRESSION

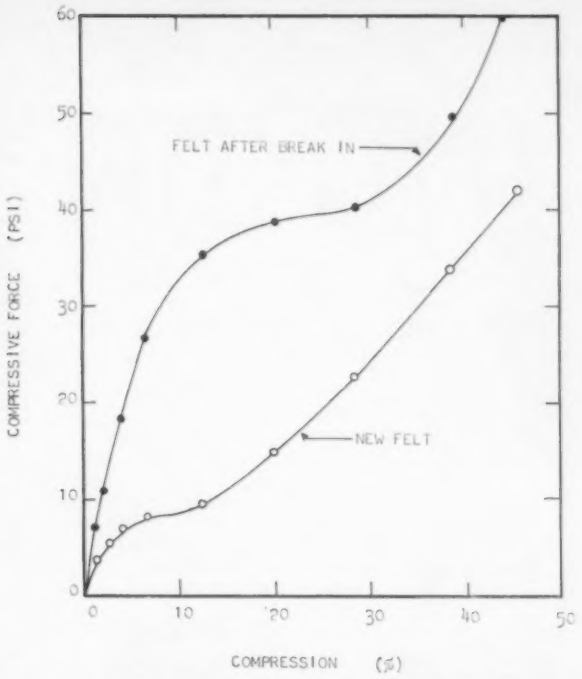


FIGURE 3. EFFECT OF BREAK-IN ON FELT COMPRESSION

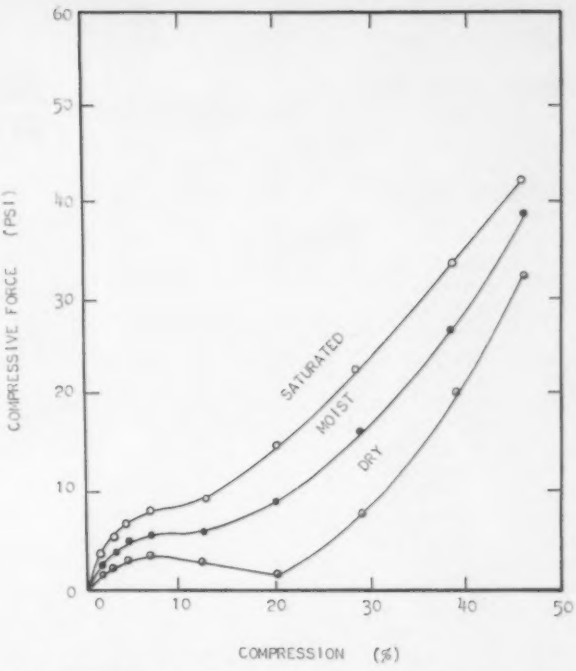


FIGURE 4. EFFECT OF FELT MOISTURE CONTENT ON FELT COMPRESSION

ing measurements of Ward (3) and Wahlstrom (2) confirm this fact. After the break-in, felts continue at a level of high water removal efficiency until a period of deterioration, usually gradual, sets in as a consequence of wear, plugging, or both. By the time the felt is removed, its ability to remove water is considerably impaired.

The pattern of an initial break-in, a period of optimum water removal and a declining performance period, gives little or no support to the traditional belief that water removal properties depend solely on felt openness.

Papermakers know that suction box vacuums increase progressively throughout the life of a felt. This indicates that the felt is most open when it is new during the time its water removal performance is demonstratably not at its best. Figure 1, showing the change of Huyck-Smyth felt porosity meter readings with felt life, fully confirms the papermakers' observations of decreasing openness with felt age.

Impact Loading

Much of the thinking and research on press operations has been against a background of static pressing or of low speed wringer rolls. Experimentally, compressive loads are gradually applied and gradually removed over intervals of about one second to several minutes. Also, water removal phenomena are concurrently observed over these rather long intervals. Such conditions are a far cry from those actually existent in the nips of high speed presses. Here the compression period is short and pressing is applied more like a blow with a hammer. The load is actually applied with an impact and immediately removed, all in the course of a few milliseconds.

Huyck researchers, accordingly, developed highly sophisticated testing devices to observe the compressive properties and the concurrent fluid flow properties of felts under conditions of impact loading. In these devices the entire cycle of loading, observation and load removal is completed in periods as short as two milliseconds or one five-hundredth of a second.

Upon observing the impact compressive behavior of wet felts, it soon becomes apparent that their water removal properties are highly dependent on the rate of load application. For this reason conventional stress-strain instruments, with their limited rates of loading, do not meaningfully forecast high speed press conditions. The data in Figure 2 clearly show that the force required to impose any given compression on a water saturated felt is considerably greater for high speed than for low speed machines. This fact will not surprise papermakers, who know that high nip pressures must be imposed to wring the water out of felts running at high speeds.

Effect of Felt Break-In

Under impact loading conditions, it is of interest to examine how the break-in period affects felt properties. Figure 3 shows the high speed compressive properties of the same felt mentioned above when new and after break-in. It is evident that the felt after break-in experiences a faster build-up of pressure and a higher level of impact loading than it does in the highly cushioned new state. Even though a soft, new felt undergoes a greater percentage compression in passing through the nip than it does after the break-in, Figure 3 shows that with the same press loading, it does not experience as high a level of pressure per unit area. Hence, a paper sheet passing through the nip with a new felt would experience considerably more gentle pressing than with the same felt after it has become conditioned and somewhat more firm. Papermakers will recognize this as at least part of the reason why better sheet consistency is obtained after a new felt has been firmed up somewhat by a break-in. Peters (4) has made observations which confirm that firmer

felts wring out paper sheets to higher consistencies.

Effect of Felt Moisture

Again, in the light of impact loading phenomena, let us examine the effect of felt moisture content on felt properties. Figure 4 shows the high speed compression properties of dry, moist, and water saturated felts. Here we see that the higher the water content, the greater is the pressure build-up for a given degree of compression. This might suggest that the sheet would be pressed to a higher consistency under the greater pressure imposed with the high water content of the felt. This is not the case, because the difficulty of sheet crushing, due to excessive loading rates and to excessive water flow laterally within the sheet, enters the picture. In addition, if substantial amounts of water are still retained in the felt after pressing, rewetting, of the sheet on the outgoing side of the nip may become a real problem. In the next issue we will explore this important phase of press operation further.

Summary

Closer study of the fluid dynamic processes that occur in the nip of a paper machine press has revealed fundamental knowledge previously unavailable. The concept of impact loading has been especially useful in characterizing both sheet and felt properties with regard to water removal. This work, made possible by the sophisticated instruments developed by Huyck, has graphically shown the important roles played by rate of felt loading, felt moisture content, and felt break-in period in overall felt performance.

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Note: Part II, to be published next week, will discuss "A Theory of Press Nip Dynamics."

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Evaluation of Strapping Materials

Discusses the strength and performance of "Avistrap" Cord Strapping, the rayon packaging material. Featuring economy, safety, ease of handling, light weight and flexibility. Report. Robert K. Scharff, Industrial Packaging Dept., American Viscose Corp., 1617 Pennsylvania Blvd., Philadelphia 3, Pa.

Bearings Bulletin

Shows all the lines of bearings and bearing specialties for which the company is the authorized distributor. Bulletin, Dixie Bearings, Inc., 276 Memorial Dr., S. W. Atlanta 3. Ga.

Gated Count-Pak

Describes how this new gating device automatically starts the count when the gate is open and stops counting when it is closed. Also covers all special features of the counter ("Series 1817") which make it suitable for laboratories, refineries, bulk liquid transfer and storage stations, and similar applications. Bulletin. Electronic Controls Div., Veeder-Root, Inc., 5 Maple St., Danvers, Mass.

Hydrocarbon Resin Emulsions

Describes nine different products, each designed for specific types of application in the coatings, paper, adhesives, and rubber latex industries. Opportunity to design waterproof and moisture-resistant products starting with a water base system is offered. 12 p. Brochure. Pennsylvania Industrial Chemical Corp., 120 State St., Clairton, Pa.

Motors and Adjustable Speed Drives

Features application photographs of gearmotors, adjustable speed drives, and explosion-proof, non-ventilated, drip-proof and wound rotor motors. Descriptive information on all equipment is outlined. 4 pp. Bulletin 113. Dept. P, Louis Allis Co., 427 E. Stewart, Milwaukee, Wis.

The Bird Cyclean

Contains information on stainless steel, free vortex, drop-in-pressure Cyclean units for removal of dirt and shines from pulp and paper stocks. Also gives information on sizes and applications and includes many illustrations. 7 pp. Bulletin. Bird Machine Co., South Walpole, Mass.

Pipeline Consistency Regulator

Describes and illustrates DeZurik's compact Pipeline Consistency Regulator and how it is widely used on pressure refining systems, ahead of stock meters, and in stock transmission systems. 4pp. Bulletin 400. DeZurik Corp., Sartell, Minn.

Unitized Recorders/Controllers

Describes Bristol Co., Series 670 Metagraphic Pneumatic Receiver. Photographs and engineering drawings are used to supplement discussion of the instrument's construction, design, size and capabilities as an addition to the company's line of "Functionally Unitized Instruments." Transmitting, controlling and supervising instruments are placed—without grouping—in the most desirable location. Product Data A113.3.3-2. 7 pp. Bulletin. Bristol Co., Waterbury 20, Conn.

Progress in Development of a New Sheet Forming Method

In this radical new method, known as the Verti-Forma, the sheet is formed between two vertical wires. The originators, Black-Clawson Co., emphasize that this unit is still in development and not available for mill installation.

W. S. Corbin,
Paper Machine Division,
Black-Clawson Co.

This is an informal outline and progress report on a new development in web formation on which the Black-Clawson Co. has been working for the past four years. The development has successfully progressed from theoretical to practical application studies. Our web forming unit, which we call the "Verti-Forma," is, however, still in the laboratory development stage, even after four years of "blood, sweat and tears," backed up by a sizeable cash investment. However, our work has progressed to the prototype stage.

Black-Clawson's Research and Development Department, under J. Baxter, began searching in 1957 for a new sheet forming principle which would give us as an end point, a sheet with certain physical characteristics that did not exist in sheets produced by standard methods at that time, and which could be produced at much higher speeds than paper machines we now operate. These basic requirements were for a completely symmetrical sheet in all directions, having a uniform smooth surface on both sides with fines and filler on the surfaces and with the long fibers buried in the geometrical center of the sheet for physical stability. A sheet of this type would then require a minimum of surface coating for fine multi-color printing and would remain dimensionally stable during the printing operations to insure sharp and distinct color lines.

After considering these requirements, it was felt these specifications would be a distinct advantage, not only in printing papers but in most every class of paper.

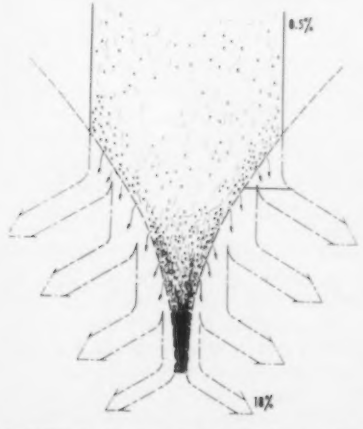

FIGURE 1—Basic principle indicates how papers may be made with controlled structure and identical surfaces on both sides.

Basic Theory and Principle

In order to secure a web having identical opposed surfaces, it is necessary that drainage takes place from both surfaces **simultaneously** in identical amounts at points directly opposite. To the degree that drainage varies from one surface to the other, so the character of the sheet surfaces can be made to vary, thus providing a means of controlling deposit of the furnish constituents. These conditions require that direction of travel of the forming web be **vertical** and moving from **top** to **bottom** to take full advantage of the properties of gravity.

As liquid is filtered from a fibrous slurry, the more minute particles tend to migrate with the flow of the withdrawn liquid, followed in progressive order by the next larger particles and last of all by the largest suspended particles present. If these smallest particles are trapped at the surface of by virtue of the openings therein being too small to permit their passage, a "filter cake" will be formed, thus coating the filtering surface with the smallest particles and providing a filter mat on which remainder of particles will be deposited as drainage progresses.

The longest and strongest fibers will be positioned in the geometric

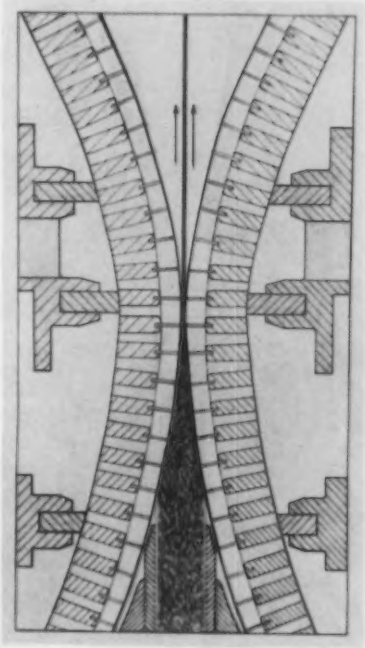

FIGURE 2—How the Verti-Forma might be used with suction double breast rolls for production of lightweight papers such as tissue.

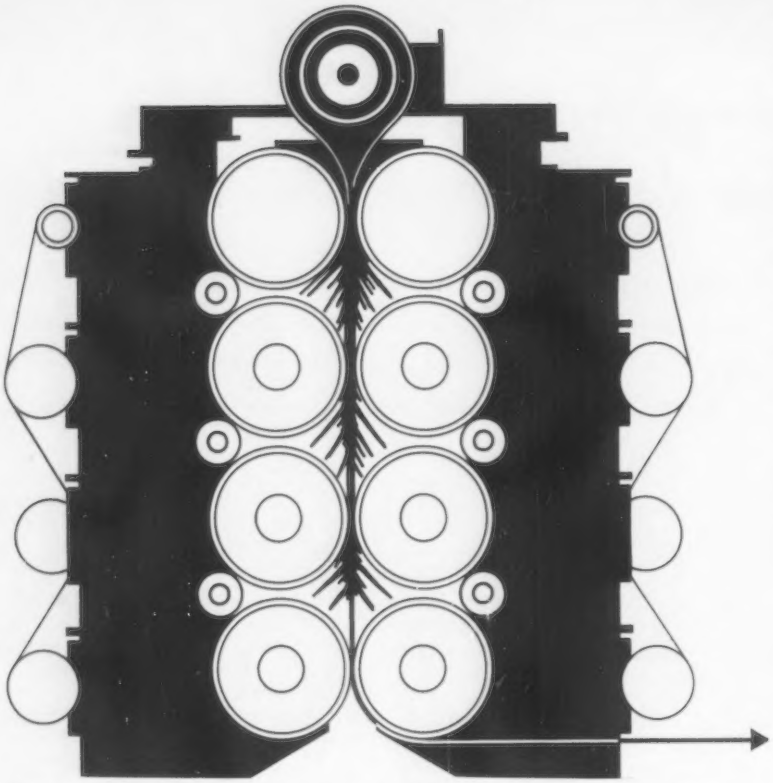

FIGURE 3—Original conception of Verti-Forma design using vertical series of suction rolls, now discarded.

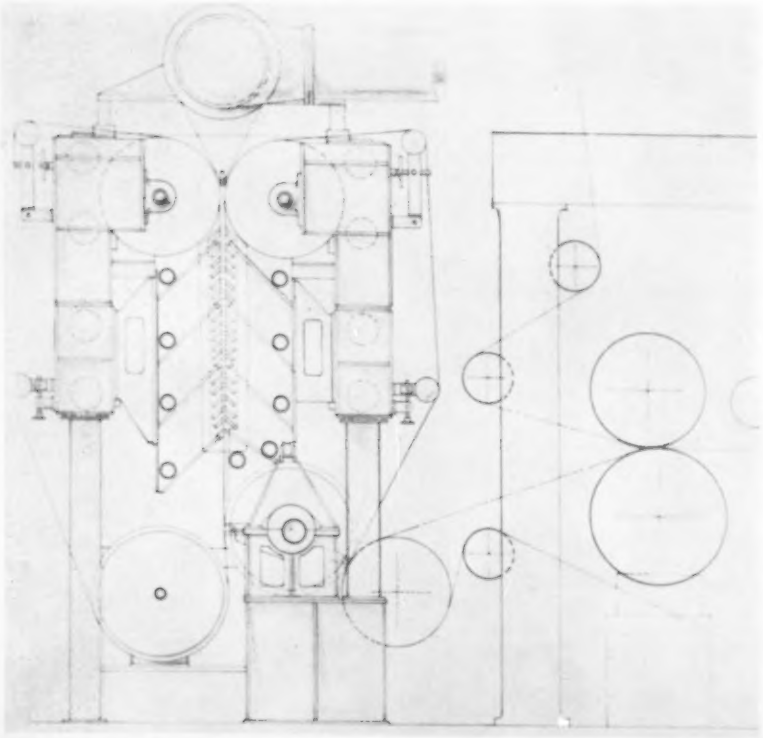

FIGURE 4—Latest design uses only one suction roll adjoining the press sections located at the right.

center of the sheet to insure resistance to curl and stablize shrinkage during the changes in moisture content of the sheet. Figure 1 shows the basic principle of this development.

An obvious method of removing the water in equal and opposite directions for weight sheet with a double suction breast roll is indicated in Figure 2. The big advantage of this arrangement over the present use of a single suction breast roll is the fact that double the amount of water could be removed in the same time as with a single suction roll, no doubt with less disturbance to the fiber pattern as only half the water must be removed from each side.

Another advantage to this method might be the fact that when the sheet is deposited on a fourdrinier at speeds of between 2500 and 3000 f.p.m. as at present on tissue and newsprint there is a definite disturbance of the top of the sheet in relation to the bottom of the sheet when it strikes the still air above the sheet. With the Verti-Forma process, the sheet at no time comes in contact with anything but surfaces travelling at the desired speed of the sheet.

Original Design

The original conception of the Verti-Forma (Trade Mark) machine from which the first prototype unit was designed and built following the laboratory stage of development is shown in Figure 3. Basically, the unit consists of a new development in headbox design, based on a horizontal cross machine Selectifier screen. The outlet from the collecting ring of the screen terminates into what would correspond to slice lips between two precision ground solid breast rolls. The sheet is deposited in a vertical direction between two vertical running fourdrinier wires whose path is defined in this downward travel by a series of suction rolls and deflectors until the sheet has been de-watered to a consistency equivalent to the sheet leaving a couch roll. At which time the sheet is peeled around one of the bottom suction rolls and onto a felt.

Each suction roll would have a suction box, one lip of which would be on the contact point of the roll with the wire, and the other lip being on the contact point of the suction roll and a rubber sealing roll between the two suction rolls. Each suction roll would have a vacuum which might be different from the vacuum in succeeding rolls. This vacuum could be controlled to give a uniform and continuous drainage as the sheet passed from the breast roll area to

the bottom couch roll area.

In order to keep air from being aspirated into the first pass of the sheet between the solid breast rolls, the top chambers between the headbox and the top of the breast rolls were to be shielded and enough steam pressure added to these chambers to create a slight outward flow of the steam rather than an inward flow of the air around the wire into the nip. Any steam condensed in these chambers would go into the sheet as water without disturbing the overall flow.

It will be noted that at no time does the sheet come in contact with air or anything but the moving wire once it is deposited in the machine. Water would be removed as it travels down the converging lines of the two wires.

Present Design

The basic arrangement of the present prototype machine is shown in Figure 4. The previous figures show the conception of the Verti-Forma from which the first prototype was built. Since then, two additional prototype machines have been built, each one actually simplifying the construction and giving more encouraging results.

It was found that suction rolls were actually not necessary in anything except the bottom rolls. At high speeds and the dilute consistencies at the beginning of the formation, it was very difficult to actually get the water through the shell into the interior of the suction rolls.

As a result, a new unit was built with the suction rolls being replaced by just vacuum compartments with the wire supported on a series of deflectors as shown in Figure 4. The only suction roll now used is the bottom couch on the side next to the press section. The opposite bottom roll is a plain roll and is positioned some 18 inches below the suction couch.

The last section above the suction couch roll has what would correspond to a suction flat box of the standard fourdrinier with no opposite counter part. At this point, it was found that the formation of the fibers had stabilized to the point where relatively high vacuum could be applied to the sheet without disturbing any of the formation.

The entire forming length on the model from the center line of the breast roll to the center line of the couch roll is only some six ft. It has been found possible to run, the equivalent of 30 pound book paper at 1200 f.p.m. starting with a consistency of 0.5 per cent and taking the sheet off the couch at between 15 and 17 per cent with at no time using more than a fraction of an inch of vacuum in the compartment, 2 inches in the flat box and 3 inches in the couch.

The results indicate that the faster this unit runs, the less problems are involved. At speeds of 700 f.p.m. and below, many problems existed which did not exist at speeds of from 1200 to 1500 f.p.m. Actually speeds are contemplated on the final machine in the 5000 f.p.m. range, in sheets in the 30 pound range.

As mentioned, the actual results on experimental runs have been encouraging to the point where the model is now being brought under more accurate control as far as consistency regulation, vacuum and speed controls.

From a paper presented at the June 1961 Meeting of the Empire State Section of TAPPI.

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Deinkers Focus a Trouble Light on Problems of Bleaching Reclaimed Stock

"What's new in bleaching of deinked pulps?" might well have been the theme of the sixth annual conference just held in Kalamazoo, Mich.

Harry Dyer,
Associate Editor,
Paper Trade Journal

Problems of bleaching deinked stock came under the close scrutiny of another record-breaking annual deinking conference (the sixth) just concluded at Kalamazoo, Mich. Particular among these problems were color reversion, ORP control of chlorination, bleachability, effects of temperature and chlorine concentration, stripping of dyes, use of peroxide. It was notable that five of the eight speakers suggested the many of the present day problems in bleaching deinked pulp arose from the increasing use of groundwood virgin pulps in magazine and book papers.

Especially interesting among the discussions was a detailed description of Kimberly Clark's new deinking mill in West Carrollton, Ohio. This is reported more extensively later.

The two-day conference was divided into four-man panel sessions in the mornings and visits to Kalamazoo Paper Co., Allied Paper Co., and Pioneer Paper Stock Co. during the afternoons. Kalamazoo's Hotel Harris was the scene of the meeting on Thursday and Friday, October 5-6.

The annual banquet was held Thursday night; A. J. Felton of Black-Clawson Co. was toastmaster, J. D. Dailey, senior vice president of Allied Paper Co. was the featured speaker. He was introduced by Ward Harrison, president of Allied Paper and former president of TAPPI.

The Deinking Conference Committee was composed of A. J. Felton general chairman; George Sisler, Bergstrom Paper Co., program chairman; Stan J. Stetz, Allied Paper Corp., local arrangements chairman, and R. Bennett, Allied Paper Corp. plant tours chairman.

Color Reversion in Deinked Pulps

A. H. Nadelman, consultant to the paper industry, presented a detailed paper discussing some aspects of color reversion of bleached secondary fibers. Through the basis of an extensive literature review and laboratory experiments, he traced the causes of color reversion. He then related how color reversion can be minimized in the mill. Some of the facts brought out in Dr. Nadelman's paper are:

A. J. Felton
Chairman, Deinking Committee

H. E. Corwin
Vice Chmn., Deinking Committee

- After several years of controversy it seems to be now well established that both carbonial and carboxyl groups in cellulose are responsible for color reversion; the difference being that carbonials seem to be far more (active) in color reversion and the difference between the two types of degradation is one of degree.
- Experiences on two- and three-stage bleaching of deinked stock showed clearly that pH adjustment to alkaline conditions during hypochlorite bleaching resulted in good brightness stability.
- Two stage bleaching with a hydrogen peroxide treatment resulted in increased brightness and good color stability.
- It was found that the selection of the deinking agent and of the deinking temperature influenced fiber strength and color reversion of the bleached pulp. Use of sodium peroxide as the deinking agent resulted in good color stability, cooking with sodium carbonate produced slightly better color stability than cooking with caustic soda.
- Each of the three chemicals used in deinking requires different temperature levels for minimum color reversion of the bleached stock. However, low temperature deinking at 110°F. resulted regularly in low color

stability of the bleached deinked pulps.

Panel moderators for the meeting were Henry E. Stevens, Ward Paper Co., and M. R. Wilkins, Kalamazoo Paper Co. It was announced that the seventh Deinking Conference will be held at the Ben Franklin Hotel in Philadelphia on Sept. 19-21. This year's conference was sponsored jointly by National TAPPI and the Kalamazoo Valley chapter.

Following are resumes of several of the papers presented.

Stripping Dyes from Deinked Stocks

"Zinc hydrosulphite is a useful tool for decolorizing dyed paper," said **Robert W. Barton,** of Virginia Chemicals & Smelting Co. "When used alone it will permanently destroy, or strip, about 66 of the acid dyes, 12 per cent of the basic, and 98 per cent of the direct dyestuffs listed by the American dye manufacturers. In addition, 35 per cent of the basic and 16 per cent of the acid dyes can probably be decolorized permanently with zinc hydrosulphite. The chemical nature of the dye as well as the substantivity of the dye molecule, whether or not rosin size and alum have been used, and the type of pulp influence the conditions required for stripping with zinc hydrosulphite.

The following general conditions should be used when stripping with hydrosulphite, either alone or in conjunction with chlorine:

1. With ledger and other bleached chemical stocks colored with direct dyes, a sufficient concentration of zinc hydrosulphite to give at least a 5/1 weight ratio of reducing agent to dye concentration (if known) at temperatures of 100 to 180°F. should be used. If the stock is sized, from one to three per cent sodium tripolyphosphate will usually disperse the size and lower the temperature and concentration of hydrosulphite required to destroy the color. If the sheet is not sized, 0.5 to 1.0 per cent of the auxiliary agent may also allow less severe conditions to be used. If strong alkali is required for deinking, it should be added after the hydrosulphite.

2. With colored groundwood and unbleached stocks dyed with triarylmethane colors, a 10/1 hydrosulphite to dye ratio—or at least 2.0 per cent on the fiber—temperature of 165°F. to 180°F. and one to three per cent sodium tripolyphosphate should be used.

Zinc hydrosulphite is used in combination with chlorine to strip sheets colored with several dyestuffs. The hydrosulphite can be used alone and in combination with chlorine in established cost formulas to recover colored broke when the dyestuffs used are known and are controllable. Zinc hydrosulphite will remove stilbene colors which are not stripped by hypochlorites and this forms the basis for extensive use of hydrosulphite in the deinking industry.

Ward Harrison
President, Allied Paper Co.

J. D. Dailey
Banquet Speaker

The sequence of addition of hydrosulphite and hypochlorite is immaterial. The hydrosulphite can be added first if the stock is washed prior to the addition of the hypochlorite. Washing is necessary to remove hydrosulphite decomposition produce which will consume chlorine. On the other hand, when hypochlorite is added first, it is necessary to add either sulphur dioxide or sodium metobisulphite to remove residual chlorine which will, in turn, consume the hypochlorite is always added before the hydrosulphite. In deinking mills, zinc hydrosulphite is usually added first in the deinking cycle.

In mill applications of zinc hydrosulphite for stripping, the same rules established for handling the chemical for pulp bleaching should be followed as closely as possible. Mixing should be rapid, thorough, and as air-free as is practical and the stock should be maintained for the retention period with a minimum of air exposure. In addition, in the stripping of color, it is essential that the pulp be completely defiberized.

After disintegration, the stock should be heated to stripping temperature and hydrosulphite applied as a freshly-prepared, two to five per cent solution in each of these units as follows:

1. Beaters—the solution should be injected beneath the air-stock interface ahead of the beater roll at the correct rate to allow the addition period to take place while the stock makes at least three circuits around the beater. Once the chemical has been added, the beater roll should be stopped for the desired retention period.

2. Pulpers—the solution should be added through a pipe protruding about 12 inches below the stock surface near the edge of the pulper. About two minutes should be allowed after which the pulper rotator should be stopped for desired retention period.

If production demands make it impossible to utilize the beater or pulper for the retention period, the stock can be dumped into a chest after treatment. A minimum of flushing water should be used during the dumping cycle. Churning in fresh water causes considerable aeration which results in oxidation of the hydrosulphite.

In some mills, chests are available which can be used for stripping. In these cases, the chemical solution should be added to a pump recirculating the stock through the chest. If the chest is well agitated, the hydrosulphite solution can be added at the eye of the agitator.

Single vs. Multi-Stage Bleaching

"Perhaps the major conclusion to be drawn from the results of experimentally bleaching commercially-produced deinked pulps," said **A. D. Harbin, Jr.** of Diamond-Alkali Co., "is that a three stage bleach produces a finished pulp with generally better physical properties than does one stage bleach and does so with less chemical consumption."

In Mr. Harbin's work, co-authored with V. T. Greene, three types of pulp were investigated that were characterized by the producer as: easy bleaching, medium bleaching and hard bleaching. Furnish used in deinking the unbleached stock was: waste kraft (about 32 per cent) ledger (12 per cent) tab cards (none

SESSION I PANEL: (l-r) G. H. Baldauf, Allied Paper Corp.; P. J. Schmitt, P. H. Glatfelter Co.; A. H. Nadelman, consultant; J. D. Allen, Becco Chemicals; H. E. Stevens, Ward Paper Co., moderator.

SESSION II PANEL: (l-r) A. D. Harbin, Diamond Alkali; R. R. Kindron, Becco Chemicals; R. W. Barton, Virginia Chemicals; W. C. Martin, Kimberly-Clark; M. R. Wilkins, Kalamazoo Paper Co., moderator.

in easy and medium, 4 per cent in hard) magazines (about 48 per cent) and other (about 12 per cent).

Target brightness for all pulps was 80 G. E. points. A single-stage chlorination bleach, using a 3.8 g.p.l. solution, adding 0.75 per cent NaOH for pH control with consistency at 4 per cent and temperature at 110°F, produced the following results:

	Easy	Medium	Hard
Cl_2 dosage	9.5%	9.0%	7.3%
Cl_2 consumed	96.0%	94.4%	94.0%
Time, hrs.	8	10.5	11
Final pH	7.4	7.1	7.3
G. E.	80.3	80.5	79.7

Brightness of 79.7, 79.9 and 79.0 were produced in a three-stage chlorination-caustic extraction sodium hypochlorite bleach under the following conditions for the first stage:

	Easy	Medium	Hard
Cl_2 Dosage	5.2	5.14	4.17
Cl_2 Consumed	93.1	90.3	92.0
Time, hrs.	1.0	1.25	1.25

Consistency was at 4 per cent, temperature at 75°F. The second stage was for one hour at 12 per cent consistency and 140°F., with NaOH dosage at two per cent. Third stage conditions at 12 per cent consistency, 100°F., and 1 per cent caustic dosage were:

	Easy	Medium	Hard
Cl_2 dosage	0.94	0.94	0.67
Cl_2 consumed	93.7	95.7	90.7
Time, hrs.	2	3.3	2.1

"Possibly the outstanding differences in the pulp is the amount of chlorine they required for 80 G. E. and the time they took to consume it in single stage bleaching. The amount decreases from easy to medium to hard pulp, while the time to consume it increases. The three-stage bleaches required only 63-65 per cent of the chlorine consumption for target brightness than did the single-stage bleaches," he said. However, the three pulps required about the same relative amounts of chlorine to get to target brightness by the three stage route as by the one stage, as these ratios show:

1-stage-easy:
medium: hard=1:.95:.75
3-stage-easy:
medium: hard=1:.96:.78

Points of brightness change for per cent chlorine added were, in the single stage case, 0.63, 0.89, and 0.39 for the easy, medium, and hard pulp, but in the three stage bleach, it was 12.5 for all pulps. In other words, the first two stages of the three-stage bleach largely wiped out the brightness response differences of the pulps. Standard chemical and physical tests showed that in three stage bleaching:

- Brightness reversion is less. This difference is quite pronounced for the hard pulp, comparatively minor for the easy and medium pulp.
- Viscosity is lowered and 1 per cent NaOH solubility is increased, both moderately. Single stage bleaching does the same, only more so. This indicates three-stage bleaching causes less pulp degradation.
- Bursting strength is improved. The easy pulp indicated slight improvement in the single stage but the medium and hard pulps showed definitely lower burst.
- Tear strength is lower but less so than by single stage bleaching, with the exception of the easy pulp whose tear strength rose moderately with the three-stage bleach.
- Tensile strength improved but remained nearly unchanged or slightly improved in single stage treatment.
- Bulk is lowered with greater effect than in the single stage.
- Opacity is lowered to a shade greater effect than in the single-stage.

Deinked Pulp Bleachability

To obtain some picture of the importance of groundwood as far as its effect on bleach chemical requirements is concerned, some laboratory pulpings and bleachings were made using various proportions of magazine sections mixed with a typical ledger stock. In a two-stage sequence, the chlorine applied was split equally between the chlorination and hypochlorite stage.

These exploratory tests, as related by G. H. Baldauf of Allied Paper Corp., showed that the presence of groundwood had a very pronounced effect on the bleachability of deinked pulps. As a matter of fact, the chlorine required for the brightness level shown was exponential with respect to the percentage sections in the furnish.

The effect of groundwood content on the bleachability was then investigated using groundwood pulps from a variety of sources. Judged by permanganate number, the pulps appeared to be quite similar as far as bleaching characteristics are concerned. However, appreciable differences in bleachability were noted when the pulps were bleached in

mixtures similar to deinked pulps.

Two pulps were relatively easy bleaching pulps. This manifested itself in two ways: first, when chlorinated in accordance with permanganate number, residual chlorine was two to four percentage points higher than expected. Secondly, for a given bleach application, the pulp brightness was relatively high.

Three pulps were relatively hard to bleach. They consumed more chlorine than expected, leaving 2 to 6 per cent residuals as compared to the expected 10 per cent. Secondly, compared to the first group of pulps, low brightness was obtained at a given bleach application.

Bleaching with peroxide did not appear to substantially change the behavior of the pulp in subsequent full bleaching. Hypochlorite treatment of the groundwood pulp had lowered permanganate number. Accordingly, the "chlorine demand" was lower. However, after the hypochlorite-bleached and the corresponding unbleached groundwood pulp had been chlorinated to satisfy their respective chlorine demand, they behaved almost identically as far as their response to caustic extraction and hypochlorite bleaching were concerned.

No theory is proposed for the differences in bleachability. From the practical point of view, it appeared important to know that the differences did exist and are to be expected in bleaching deinked pulps. In general, waste paper is sufficiently diverse in origin so that it is reasonable to expect blending out of the differences in bleachability. However, if the furnish consists of large amounts of groundwood from individual sources so as to preclude blending, changes in response to bleaching may take place even though groundwood content is constant.

Bleaching With Peroxides

Robert Kindron, of the Becco Chemical Division, FMC Corp., described several methods, ranging from moderate and high density continuous towers to the various steep bleaching operations, for the peroxide bleaching of deinked stocks. "It is apparent that the deinker's bleaching system must be tailored around the groundwood fraction of the stock," he noted.

Data were presented that showed, for high content deinked stock, good bleaching response can be achieved with either the peroxide cold steep bleaching operation or the continuous tower system. Some additional brightness can be obtained by the application of a second stage hydrosulphite treatment. In certain instances, it is advantageous to follow a peroxide bleach with hydrosulphite to help remove certain reducible dyes from the stock.

When processing stocks of moderate groundwood content (40 per cent or below), the inclusion of a peroxide stage makes it possible in many cases to reduce the per cent of applied chlorine in the bleaching sequence and thus improve the bleached pulp quality. Results obtained in a two stage (hypochlorite high density peroxide) sequence indicated an average greater brightness gain of 6.4 points over a single hypo stage. Usually, equivalent pulp brightness at reduced chemical levels or higher pulp brightness at a given peroxide level is obtained with the high density peroxide application.

Most deinked stocks containing 10 per cent or less groundwood are usually treated with chlorine, and hypochlorite and in some instances, a mild caustic extraction stage is also included. In other cases, where select stock is used, it is possible to use a single stage hypochlorite treatment. As with virgin chemical pulps, hydrogen peroxide finds application in improving pulp brightness as well as the brightness stability of the bleached stock. In order to minimize pulp degradation, peroxide can be used as a complementary stage. Data presented showed that brightnesses as high as 80-81 could be achieved using a cold step treatment on deinked chemical pulp.

Co-author of the paper with Mr. Kindron is **F. J. Rosebush,** also of Becco Chemical Division.

Temperature vs. Chlorine

Mill runs, instead of laboratory tests, carried out to detemine the effect of bleaching temperatures and per cent chlorine on the opacity and strength properties of deinked stock at P. H. Glatfelter Co. were described by **P. J. Schmitt** in a paper co-authored with **I. R. Hall.** Glatfelter's mill system basically consists of the following:

Cleaned deinked stock leaves two Lancaster washers and drops into a holding tank. As it leaves the holding tank the stock is heated to a normal bleaching temperature of 110°F. However, if the operator feels the stock will be difficult to bleach he may heat it up to 120°F. or 130°F. After being heated the consistency is adjusted to about 4½ per cent by a DeZurik regulator. At this point the chlorine gas is introduced either automatically through ORP or through manual control. The stock then passes through three Hooker rubber-lined mixers. Leaving the mixers the stock enters the bottom of the rubber-lined chlorination tower where retention time is about 25 minutes. As the chlorinated stock leaves the tower, caustic is added in sufficient quantity to raise the pH from 3 to about 9. The caustic neutralizes any acids and combines with excess chlorine to form sodium hypochlorite bleach liquor. The stock then flows through two additional Hooker mixers to insure adequate mixing before the final bleaching.

From there, it drops into one of three bleach chests. Total retention time for the entire bleaching process is about 2½ hours. If the brightness

DISCUSSION GROUP: l-r) Ray Leask, Abitibi Power & Paper (Canada); Maurice Reuben, Erving Paper; A. H. Nadelman, consultant; Allan Pohls and Pentti Laakso, Tampella, (Finland); A. M. Altieri, Tileston & Hollingsworth; A. J. Felton, Black-Clawson (conf. chairman); J. F. Whalen, Combined Locks; Z. F. Razycki, Monistique Pulp & Paper.

		% Cl_2					
		Cl_2	Hypo	Burst	Tear	C.s.f.	G.E
1959	Cl_2 Demand	49.5	66.5	61.4	116	321	78.0
1960	ORP	51.3	49.1	67.8	100	361	79.3
1961	ORP	55.0	49.0	57.3	104	383	80.7

is not satisfactory, there are facilities for adding bleach at the bleach chests themselves. However, it is only rarely this is ever done.

Three types of wastepaper were used for the study: (1) Ledger (including colored broke), (2) tab cards and (3) goldenrod ledger (containing greater than 20 per cent goldenrod).

Ordinarily, the bleaching process supplies the pulp in the 75-77 G.E. brightness range, with fairly uniform strength and opacity strength characteristics. However, there are occasions when it is necessary to use two or even three times the normal amount of chlorine, for example, when large amounts of goldenrod colored waste paper are used. At such times the operator may find it necessary to raise the temperature to 120° or 130°F. The higher temperature is necessary to complete bleaching in the 2½ hour time available.

It is realized that the additional chemical and higher temperature change the pulp characteristics, but no information was available as to the extent of the damage. These studies then were carried out to supply that information.

Generally speaking, the goldenrod ledger lost considerably more fold than the regular ledger. The tab card, with its high unbleached values also lost heavily in fold, particularly at the higher temperatures. As a matter of fact, at the 130°F. temperature, the fold dropped about 50 per cent more than at the 110°F. temperature.

Bulking index was also checked but this showed no trend upward or downward regardless of bleaching temperature or per cent chlorine. Opacity loss appears directly dependent on brightness value and independent of temperature.

To summarize, the data show that our type of deinked stock can be bleached to a 76-78 brightness in a Hooker two-phase system with less than 1 per cent chlorine and negligible strength loss. As higher chlorine dosages and higher temperatures are required, the strength loss will quickly be doubled or tripled.

ORP Control of Chlorination

The use of oxidation-reduction potential applied to the chlorination of deinked pulp and results obtained were reported by **James D. Allen,** of Becco Chemical Division of FMC Corp. Mr. Allen formerly was associated with Bergstrom Paper Co., and it is ORP method of chlorine control at Bergstrom which he described.

The ORP control is installed between the chlorine mixer and the tower. Pulp samples are automatically withdrawn from the mainstream immediately after the mixer and a time interval of 105 seconds occurs before the reading is taken. Effectiveness of ORP control of chlorination (vs chlorine demand readings) in the three-stage bleach (chlorination-caustic-hypo) may be seen in the above table.

To date, use of the ORP cell has proven very successful, and there have been no serious problems with its maintenance.

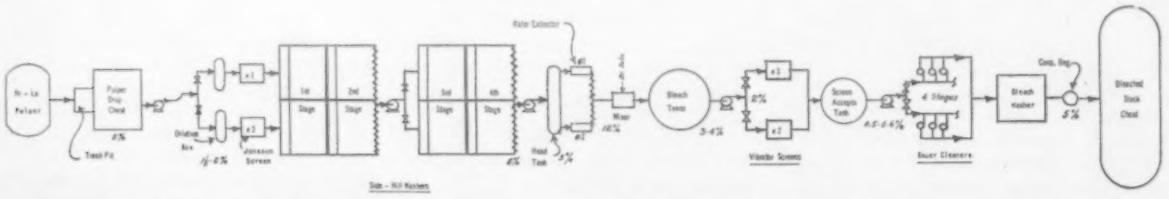
K-C's New Modern Deinking Mill Has High Density Bleaching Stage

William C. Martin,
Kimberly-Clark Corp.,
Moraine Mill,
West Carrollton, Ohio

When it was decided to expand the paper manufacturing facilities at the Kimberly-Clark Moraine mill, the decision was also made to expand the deinking facilities. The new deinking system was to have the following salient features:

- The total capacity of the system was to be 150 t.p.d.
- There was to be two parallel lines of equipment: one line operating at 100-ton-per-day capacity to supply the new paper machine; and one 50-ton-per-day line to supply the existing paper machine.
- One stage of high density (12 per cent consistency) bleaching was to be provided. Room for additional stages, if needed, was also to be provided. The system was to be capable of defibering wet strength papers at a rate lower than the full t.p.d.
- The system was to be capable of running colored, non-bleachable grades on one line of equipment and white (bleachable) grades on the other line. High groundwood content, coated, or highly inked paper were not to be desired.
- Construction was to proceed in such a manner that the old existing deinking system could continue to operate until the new 100-ton-per-day line could be installed and oper-

(Continued on page 52)



FLOW SYSTEM of K-C's new deinking plant at Moraine. There are no drastic new concepts involved, but a well-engineered integration of accepted practices and modern equipment. Numbers indicate pulp consistencies at that stage.

Maintenance of Pulp and Paper Mill Equipment

The forty-three sections of this book represent the first effort anywhere to publish in one volume comprehensive coverage of the maintenance of most major equipment used by our industry. Each section deals with the problems of a specific type of equipment such as drum barkers, jordans, vacuum pumps, etc. The book, therefore, presents a completely different and more concrete approach than our previous publication (still available) "Pulp, Paper and Board Mill Maintenance" where the subject was discussed in the more general terms of: organization, planning, lubrication, and the specialized problems of each operating department.

Principal machinery covered in *"Maintenance of Pulp and Paper Mill Equipment"* includes:

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Black Liquor Evaporators
Precipitators
Lime Kilns
Conveyor Belts
Screw Conveyors
Bleach Plants
Stock Pumps
Disk Refiners
Jordans
Conical Refiners
Centrifugal Pumps
Chemical Pumps
Vacuum Pumps
Centrifugal Screens
Paper Machine Screens
Fourdriniers
Rubber Rolls
Doctors
Paper Machine Drives
Ventilation Systems
Size Presses
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"A practical monograph covering design and operation of fourdrinier paper machines from stuff box to couch"

Written with the young operating engineers and technicians in mind, this book has great value to experienced practical papermakers as well. Five vital chapters cover . . . Stock and White Water Systems . . . Headboxes and Slices . . . The Auxiliary Components . . . Troubleshooting . . . Curing Paper Defects at the Wet End . . . It will be to your advantage to accept our invitation immediately. We have already had an unusual number of requests for the book even before publication was announced.

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Please send me ..... copies of A MONOGRAPH ON FOURDRINIER MACHINE WET ENDS at $2.50 each, postage paid.

☐ Bill Company ☐ Check Enclosed

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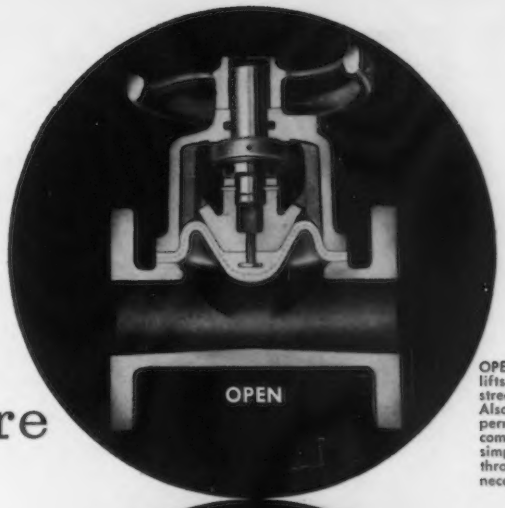
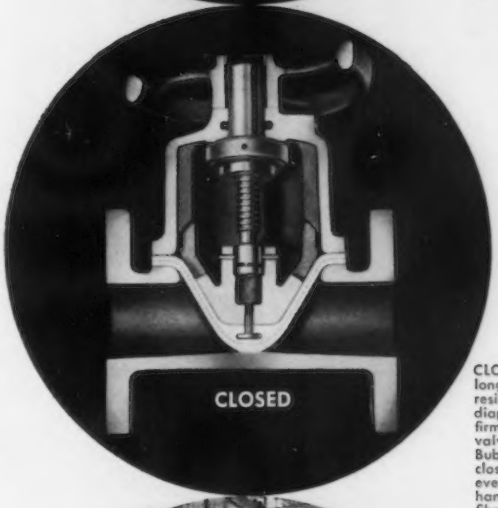
Street ..... *City and State* .....

Maximum flow, minimum turbulence, negligible pressure drop!



OPEN Diaphragm lifts high for streamline flow. Also, valve design permits comparatively simple rodding through, when necessary.



CLOSED Despite long usage, resilient diaphragm seals firmly against valve body. Bubble-tight closure is assured, even when handling gritty or fibrous materials.

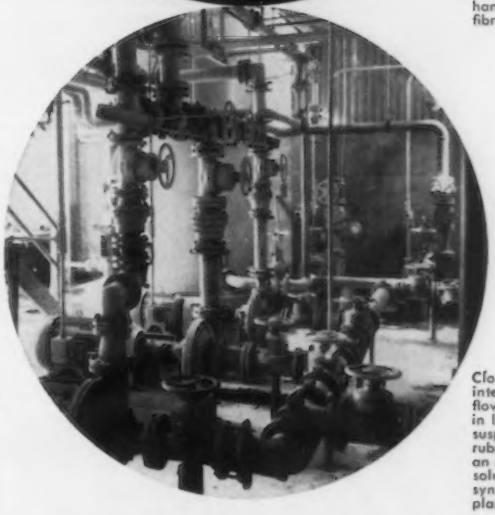
GRINNELL-SAUNDERS STRAIGHTWAY DIAPHRAGM VALVES* are unsurpassed for handling viscous materials — semifluid foods, latex, magmas; solids in suspension — slurries, pulp stock, sludges; fluid-borne abrasives; corrosive chemicals.

The straight-through design eliminates pockets, gate trenches and other obstructions which can trap solids. The result is maximum flow, minimum turbulence, and negligible pressure drop for a diaphragm valve.

The straight-through design also has the advantage of causing very little basic change in the direction of the fluid stream, thus reducing abrasive action from high velocity particles.

These advantages are in addition, of course, to benefits normally associated with the use of diaphragm valves . . . such as freedom from corrosion and clogging of working parts, since these are completely sealed off by the diaphragm; prevention of product contamination; elimination of stem leakage and routine maintenance, because there are no packing glands. Also, when properly pitched, lines are self-draining.

Grinnell-Saunders STRAIGHTWAY Diaphragm Valves are available in a choice of body sizes and materials, linings and diaphragms. Handwheel or power operated. For complete information, write Grinnell Company, Inc., Providence 1, Rhode Island.



Clogging and interruption to flow is prevented in lines handling a suspension of rubber particles in an acid brine solution at this synthetic rubber plant.

GRINNELL-SAUNDERS DIAPHRAGM VALVES

Grinnell Company, Inc., Providence, Rhode Island • Coast-to-Coast Network of Branch Warehouses and Distributors

GRINNELL COMPANY • BRANCH WAREHOUSES AND DISTRIBUTORS FROM COAST TO COAST
PIPE FITTINGS • VALVES • PIPE HANGERS • PREFABRICATED PIPING • UNIT HEATERS • PIPING SPECIALTIES

. . . Modern Deinking Mill

(Continued from page 50)

ating satisfactorily. Those usable components of the old existing system were to be moved and reinstalled on the new 50-ton per day.

Description of Process

In the 100 t.p.d. line, which has been in operation now for waste paper is charged to a three-ton capacity stainless steel pulper from a pallet conveyor and/or Shartle roll splitter.

Hot water is metered into the pulper from a wooden hot water storage tank. Two heat exchangers heat the fresh water. Higher temperatures within the pulper can be obtained by direct steaming. Liquid caustic is added to the pulper through a pre-set gallonage flow meter. The pulper is hooded so that fumes and hot vapors can be drawn off with an exhaust fan.

Defibered stock is dropped from the pulper through a trash pit drag conveyor to an agitated brown stock storage chest. The stock is then pumped to two Jonsson screens in parallel.

There are four stages 10 x 14 ft. sidehill washers using counterflow of stock and water. The first stage has a finer mesh (80 x 60) than the other three stages (30 x 40). The stock discharged from the fourth stage sidehill is diluted to less than five per cent consistency and pumped to a pair of triple screw Rice Barton extractors. A screw-flite conveyor delivers the stock to an Impco blender.

Sodium hypochlorite bleach liquor 60 g. p. e. available chlorine is metered through a magnetic flow meter. Sodium hypochlorate is used because it is easier to prepare due to certain hard water conditions that exist in the area. Also bleach residuals are easier to wash out of the pulp at the bleach washer. At present, bleach consumption is higher than expected.

Steam is also added at the blender to provide the proper bleaching temperature before the stock drops into the steel, tile-lined high density tower. Dilution within the tower is done with four high pressure nozzles spaced around the tower five feet from the bottom. A propeller-type agitator mixes the stock and water before pumping from the tower.

The dilution water is adjusted by observing the difference in temperature of two temperature sensing elements located in the side of the tower, three feet difference in elevation, with the lower sensing element two feet above the dilution nozzles. If the upper temperature sensing element indicates that its temperature is as "cold" as the lower temperature sensing element, there is too much dilution water being added, and vice versa.

Two-Hour Retention

The bleach tower provides a two-hour retention when the 100-ton-per-day line is operated at full capacity. To date it has not been necessary to operate at a higher temperature than 120°F. at the blender to give the desired brightness, 80 points. The pH of the stock after it leaves the blender to give the desired brightness, 80 points. The pH of the stock after it leaves the blender is generally 8.0. The tower is never allowed to go below two-thirds full during normal operation to avoid "flipping the tower."

The bleached stock is pumped from the bottom of the tower to two Bird Vibrotor screens in parallel. Rejects from the Vibrotors are controlled automatically with liquid level sensing instruments. The rejects are further diluted to less than one per cent before going to a tailing flat screen. The accepts from the tailing screen are returned to the system.

The accepted stock from the Bird Vibrotor drops into a screen accepts tank for removal of entrained air before pumping to 4-stages of Bauer Centricleaners. Overall loss from all units is less than two per cent when properly operated.

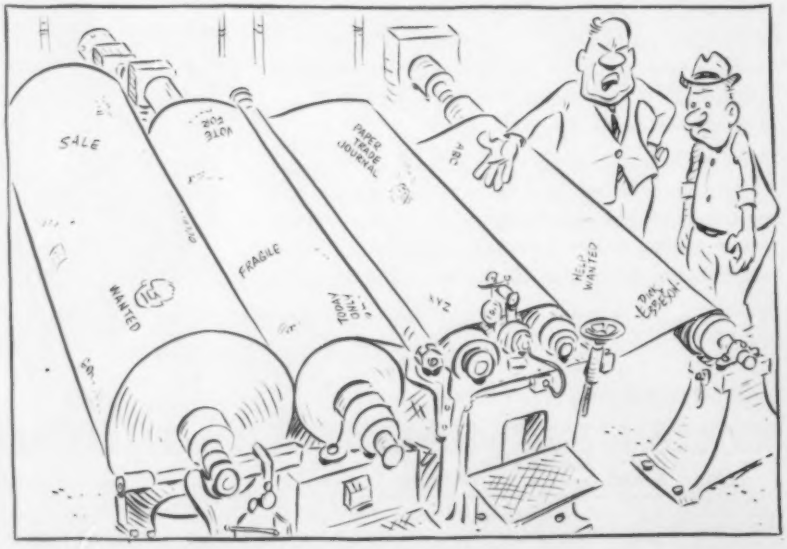
Accepted stock from the primary cleaners is drawn off as needed to an Impco vacuum washer. Excess cleaned stock is returned to the Vibrotor Screen accepts chest for recycling through the cleaners.

At present, fresh water is used on the displacement showers and repulper dilution of the Impco washer. After start-up of the new paper machine, white water will be available. The repulped mat from the washer drops into a DeZurik consistency regulator. The pH of the stock going to the DeZurik is measured and adjusted to the acid side by sulphur dioxide.

Following the DeZurik is a final storage chest of 15 tons capacity. Stock from this chest can be pumped to the stock measuring system of the new paper machine or over to the final storage chest for the 50-ton per day line. Likewise, the stock from the 50-ton-per-day final storage chest can be pumped either to the existing paper machine or to the final storage chest for the 100-ton-per-day line. With this arrangement, the full capacity of both lines of deinking equipment is available for either paper machine.

The equipment for the nearly completed 50-ton-per-day line is very similar to the 100-ton-per-day-line. However, there is no roll splitter, only one Jonsson screen, one triple Rice Barton Extractor, one Bird Vibrotor Screen, etc. There are two small Impco Vacuum Washers for the final washing after bleaching. No provisions for chemical or heat recovery were designed into the systems. All refining is done in the stock preparation area after blending with virgin fibers. Five men are required the 150 t.p.d. system.

The new system is producing stock for various grades of bond, envelope, ledger, offset and other fine papers. Generally, the reprossed fibers comprise about 50 per cent of the paper machine furnish.



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FIRST TO LAST

Famous Paper Mills of the World Serviced by

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HOLMENS BRUKS och FABRIKS AKTIEBOLAG

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415 JACKSON ST., OREGON CITY, ORE.

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Prices of Fibers

MARKET WOOD PULP

FOURTH QUARTER CONTRACT PRICES PER SHORT AIR-DRY TON

Delivered Basis

	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$82.50/ 90.00	$82.50/ 90.00	$90.00/ —	$90.00/ —	$90.00/ —
Bleached Gw'd.	97.50/100.00	97.50/100.00			
Kraft, Blchd.	‡140.00/150.00	‡140.00/150.00	150.00/ —	150.00/ —	150.00/ —
Kraft, Blchd. Hdwd	135.00/140.00		140.00/ —		
Kraft, Semi-bleached	130.00/140.00				
Kraft, Unbl.	117.50/125.00	125.00/ —	125.00/130.00	125.00/ —	
Sulphite, Blchd.	‡135.00/140.00	‡135.00/140.00	140.00/ —	140.00/ —	140.00/ —
Sulphite, Bl. Hdwd.	135.00/ —				
Sulphite, Unblchd.	125.00/ —	125.00/ —	125.00/ —	125.00/ —	125.00/ —
Sulphite, Unb'l. Gl'sn.		140.00/ —	134.00/ —		
Soda, Blchd.	130.00/135.00	130.00/135.00			

‡ Depending on Brightness.

COTTON LINTERS

F.O.B. OIL MILLS PER CWT
WEEK ENDED OCTOBER 3

	Atlanta	Memphis	Dallas	Los Angeles
Grade 1	$8.50/8.25	n.a.	n.a.	n.a.
2	8.25/7.75	n.a.	n.a.	$7.50/ —
3	7.75/7.25	$7.50/7.25	$7.50/7.00	7.00/6.75
4	7.25/6.75	7.00/6.75	6.50/6.25	6.50/6.00
5	6.75/6.25	6.50/6.25	6.00/5.50	5.50/5.25
6	6.25/5.75	6.00/5.75	5.25/5.00	5.00/4.75
7	5.75/5.00	5.25/5.00	4.75/4.00	n.a.

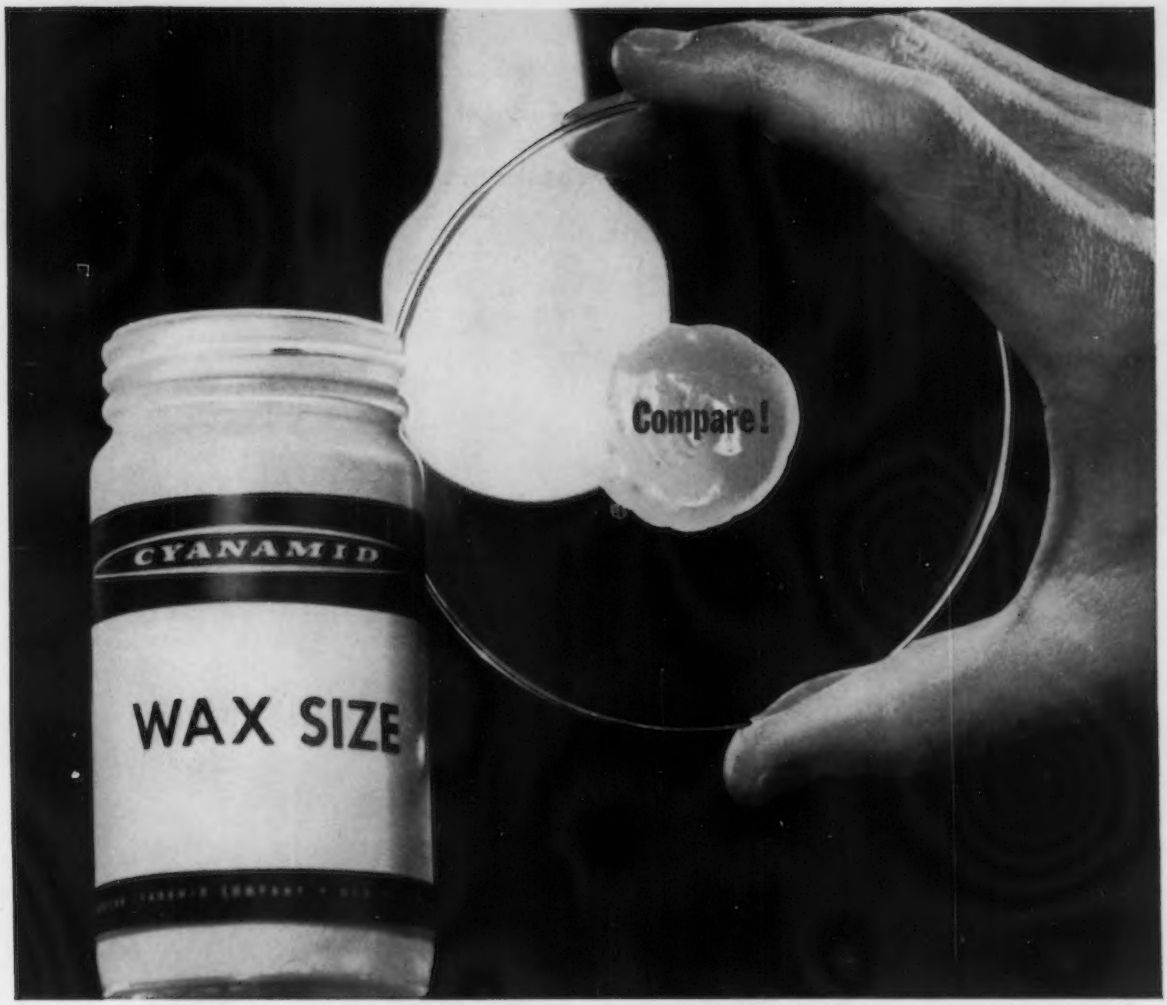
WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point — Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers and brokers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York	Boston	Chicago	Los Angeles
	October 9	October 9	October	October
No. 1 Mixed Paper	$ 14.00/ 15.00	7.00/ 10.00	6.00/ —	12.00/ —
No. 1 News	21.00/ 24.00	11.00/ 14.00	18.00/ —	16.00/ —
Overissue News (Lg. size)	21.00/ 24.00	12.00/ 14.00	23.00/ —	18.00/ —
Mill Wrappers	19.00/ 22.00	10.00/ 12.00	11.00/ —	13.00/ —
Old Corrugated Containers	22.00/ 25.00	18.00/ 18.50	22.00/ —	16.00/ —
Super Resorted Kraft Paper	35.00/ 40.00	— / —	33.00/ —	50.00/ —
New Double Kr. Ld. Corr. Cuts	27.50/ 30.00	32.50/ 35.00	35.00/ —	27.50/ —
(Semi-chem. medium)	45.00/ —	40.00/ 45.00	42.50/ —	— / —
New 100% Kraft Corr. Cuts	40.00/ 42.50	— / —	52.50/ —	— / —
New Br. Kraft, Env. Cuts	65.00/ 70.00	65.00/ 75.00	47.50/ —	37.50/ 40.00
New Br. Kr. Bag Waste Prntd	50.00/ 55.00	50.00/ 60.00	47.50/ —	35.00/ —
New Br. Kr. Bag Waste Unprintd.	55.00/ 60.00	60.00/ 65.00	55.00/ —	45.00/ 47.50
No. 1 Groundwood Shvs.	30.00/ 35.00	20.00/ 25.00	17.00/ —	25.00/ —
White Newsblanks	50.00/ 55.00	40.00/ 50.00	30.00/ —	55.00/ —
No. 1 Soft White Shvs.	60.00/ 65.00	55.00/ 65.00	50.00/ —	75.00/ —
Super Soft White Shvs.	65.00/ 75.00	70.00/ 80.00	60.00/ —	— / —
Hd. White Shvs.	85.00/ 90.00	80.00/ 90.00	75.00/ —	80.00/ —
Hd. White Env. Cuts	95.00/100.00	100.00/105.00	80.00/ —	103.00/ —
Col. Tab. Cards	50.00/ 62.50	54.50/ 59.00	47.50/ —	35.00/ —
Manila Tab. Cards	72.50/ 77.50	67.50/ 72.50	70.00/ —	75.00/ —
No. 1 Col. Ledger	35.00/ 40.00	32.50/ 35.00	42.50/ —	23.00/ —
White Ledger	55.00/ 57.50	53.00/ 58.00	50.00/ —	40.00/ 45.00
Mixed Book & Mag.†	14.00/ 15.00	— / —	10.50/ —	/ —
No 1 Books‡	15.00/ 20.00	18.00/ 22.00	27.50/ —	8.00/ 13.00

† Includes Time & Life: no coarse groundwood. ‡ Not to exceed 10% of groundwood.



Lightest in color... best stability! Test for yourself the properties of ALWAX* and WAXINE® sizes, the products of Cyanamid, America's oldest—and largest—producers of **Wax Sizes.** See for yourself that they offer the lightest color available anywhere... and the best stability. Other advantages—? Plenty! The most complete line... to assure you of the exact **Wax Size** for your particular need. Compatibility with other paper-making chemicals. Properties that produce paper with lower water absorption, smoother surface, less curl, greater ink resistance, improved lactic-acid resistance. Cyanamid **Wax Sizes** can be used with rosin sizes to increase sizing efficiency, lessen the quantities needed, and create major production savings. Call your Cyanamid salesman for complete technical information to help you select the right **Wax Size** from the widest, lightest line of sizes available today.

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designed for

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- RELIABILITY
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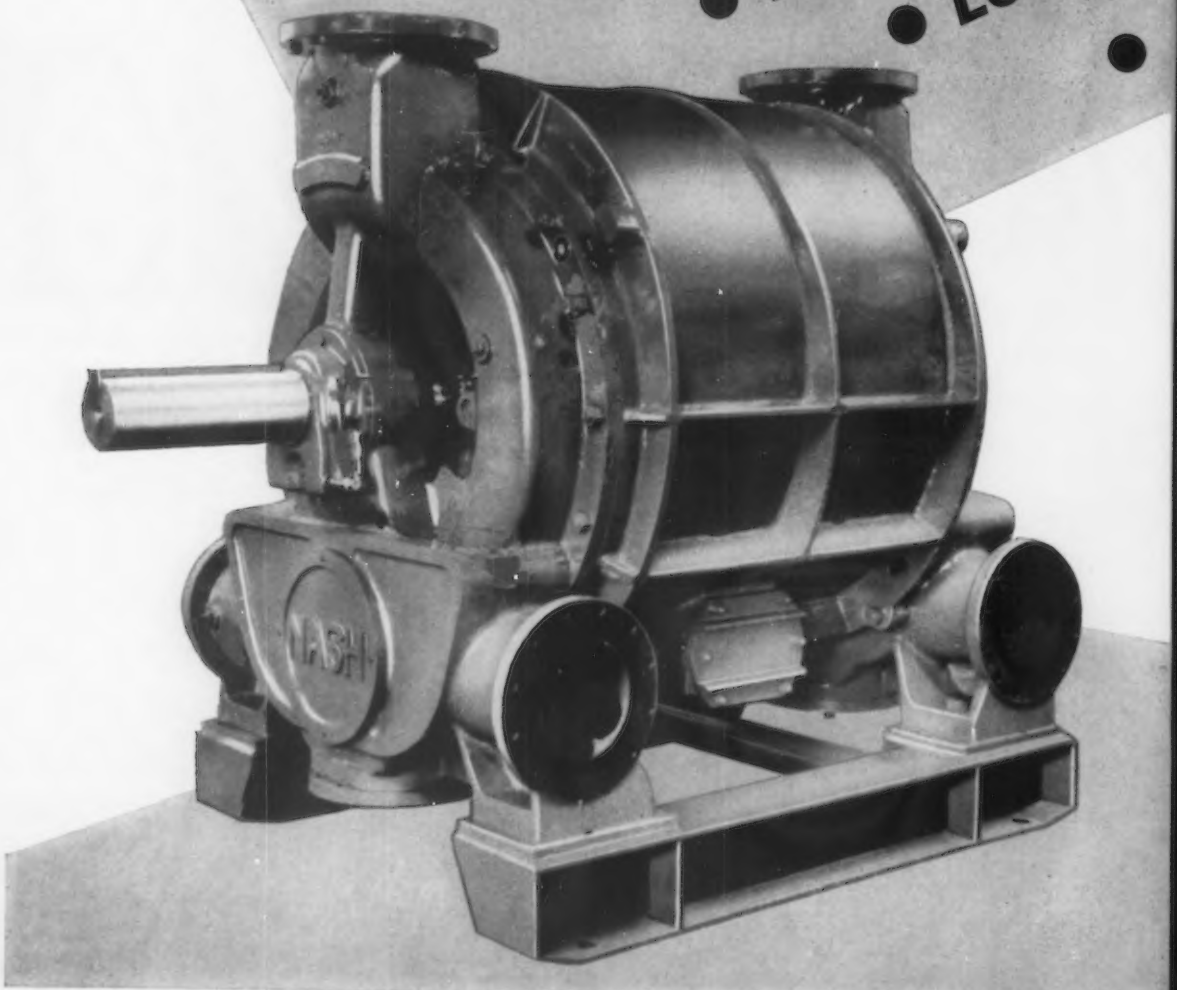

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REDUCED OPERATING COSTS

- Vacuums to 25" of Mercury with sustained volume and lower horse power. Available in capacities to 9000 cubic feet.

Can be supplied with integral reduction gear for direct connection to high speed motors.

Material reduction in floor space required.

Send now for details of the new 6000 series Nash Vacuum Pumps.

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PJT NEWS OF SUPPLIERS

T. P. Malinowski

G. Stephens

E. J. Kuhn

W. C. Osborne

A. E. Staley Manufacturing Co. has announced expansion plans for its chemical sales organization at Decatur.

Theodore P. Malinowski has been named to head the reorganized chemical sales activity. He comes to Staley's from Wilmington, Del., where he has been industry marketing manager for the Chemical Division of Atlas Chemical Industries, Inc.

He was previously development manager and assistant director of product development at Atlas and played an important role in the development of plastic products for Monsanto Chemical Co.'s Plastics division. Mr. Malinowski is a graduate of Brown University with a B.S. degree in chemistry.

J. O. Ross Engineering Division Midland-Ross Corp., recently appointed Gordon Stephens as paper mill sales manager of the New York district office.

Mr. Stephens will coordinate and supervise the paper mill sales force located in the New York office. This office covers most of the mills in the Atlantic Coast Region of the United States.

A graduate of Sir George Williams College in Canada, Mr. Stephens joined Ross of Canada as a paper mill sales engineer in 1940.

Oakite Products, Inc., pioneer manufacturer of industrial cleaning and metal treating compounds, has appointed Donald F. Moulton technical service representative in Vermont. A graduate of the University of New Hampshire, where he studied bacteriology and chemistry, Mr. Moulton has an extensive background in industrial sales.

Black-Clawson Co., New York, N. Y., announces the appointment of Edward J. Kuhn as a sales engineer in the company's Air Systems Division in Hamilton, Ohio.

A graduate of New York University where he received his degree in mechanical engineering, Mr. Kuhn was employed by Westinghouse Electric Corp. before coming to Black-Clawson. He joined Westinghouse in 1939 and became a sales engineer with that company's Sturtevant Division in 1946. He interrupted his career at Westinghouse to serve with the U.S. Navy from 1942 to 1946 and was discharged with the rank of Lieutenant, U.S.N.R.

H. W. Butterworth & Sons Co., Bethayres, Pa., has announced the retirement, effective September 30, of J. Ebert Butterworth, president and chairman of the board, after 45 years of service in the manufacturing of calender rolls for the paper industry. Mr. Butterworth has spent his entire business career with the company founded in 1820 by his great-great-grandfather. He plans to continue as a consultant and a member of the board of directors of the company.

Cameron Machine Co., Dover, N. J., in an extension of their sales coverage, has announced the appointment of John Daly and Lewis Humberstone to the Mid-West area.

The new appointees will assume the coverage formerly done by R. Sherman. Mr. Sherman, who had represented Cameron for the past year, has resigned.

Mr. Daly has been associated with Cameron for over ten years. For the past several years he has been assigned to the sales office as assistant to the sales office manager. Prior to that he worked in the service department.

Mr. Humberstone has been with Cameron's Canadian subsidiary company for the past five years, assigned to field engineering.

The resident service engineer in the Ohio area, George House, will continue in that capacity.

Research-Cottrell, Inc., Bound Brook, N. J., announces the appointment of William C. Osborne as vice president in charge of engineering and research.

Mr. Osborne, who also becomes a member of the board of directors of the corporation, will be responsible for all engineering and research activities of Research-Cottrell, one of the country's leading industrial air and gas cleaning manufacturers.

Mr. Osborne is a 1942 mechanical engineering graduate of Rensselaer Polytechnic Institute, Troy, N. Y. He holds an M.S. degree from Princeton University and was research associate at the California Institute of Technology where for several years he studied and conducted basic research programs in the field of hydrodynamics.

Prior to joining Research-Cottrell, Mr. Osborne was manager of engineering of the Harrison Division of Worthington Corp., Harrison, N. J.

AB Rosenblads Patenter and AB Ramens Patenter in Stockholm, Sweden, both manufacturers of evaporators for the pulp and paper industry, have decided to cooperate in this field.

The intention is to co-ordinate experience, design and construction and by common research and development achieve best possible technical results in plant design.

Project- and saleswork will in the future be handled by AB Rosenblads Patenter; the companies activity will, in other respects, continue as before.

Hercules Powder Co., Wilmington, Del., first and largest commercial producer of polypropylene in the United States, has announced completion of its multimillion-pound polypropylene fiber plant in Covington, Va. This plant, with an initial annual capacity of 12 million pounds, is readily expandable in order to meet the market demands of the future, according to Forest B. Evans, manager of the Fiber Development Department.

Widespread interest in polypropylene fiber stems from its unusual combination of properties. So light that it actually floats, it provides

In England as well as in the U.S.A. . . .

papermakers use and like

RIEGEL PULPS

CHLORINE DIOXIDE BLEACHED

ALBACEL®
Bleached Softwood

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Prehydrated Bleached Softwood

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Throughout the free world, papermakers use and like Riegel Pulps . . . paper-grade pulps that provide the right balance of all important qualities . . . brightness, cleanliness, strength, formability and proper beating characteristics.

BALANCED PAPER-GRADE PULPS . . .
Created *BY* Papermakers *FOR* Papermakers

substantially greater coverage per pound than any other fiber; is strong, tough, and highly resistant to mechanical abuse and chemical attack.

Westinghouse Electric Corp., New York, N. Y. has appointed D. W. R. Morgan, Jr., manager of the steam engineering department. This marks the establishment of a new department "aimed at guiding the most favorable grouping of steam division products offered on combined projects," according to W. C. Rowland, vice president.

The new department will supervise the engineering selection and combination of equipment for turbine-island projects, and will assume the administration of such contracts. It will join with the company's sales regions in the engineering promotion of the division's products with customer organizations.

Principal product of the steam division is the steam turbine for electric power production and for mechanical drives. Other products include flash evaporators for saline water conversion, gas turbines and ship propulsion machinery.

P. J. Newsom

J. H. Langstaff

Formex Co. of Canada, Division of Kenwood Mills, Ltd., has announced promotion of P. J. Newsom to the position of manager, technical services, and the appointment of J. H. Langstaff as manager, sales.

After graduating from the University of Manitoba with a degree in mechanical engineering, Mr. Newsom spent 10 years in the paper industry prior to joining Formex early last year. In his new post he will supervise the technical service engineering force in the application of Formex Forming Fabrics to the Canadian paper industry. He is located at the new plant in Kentville, N. S.

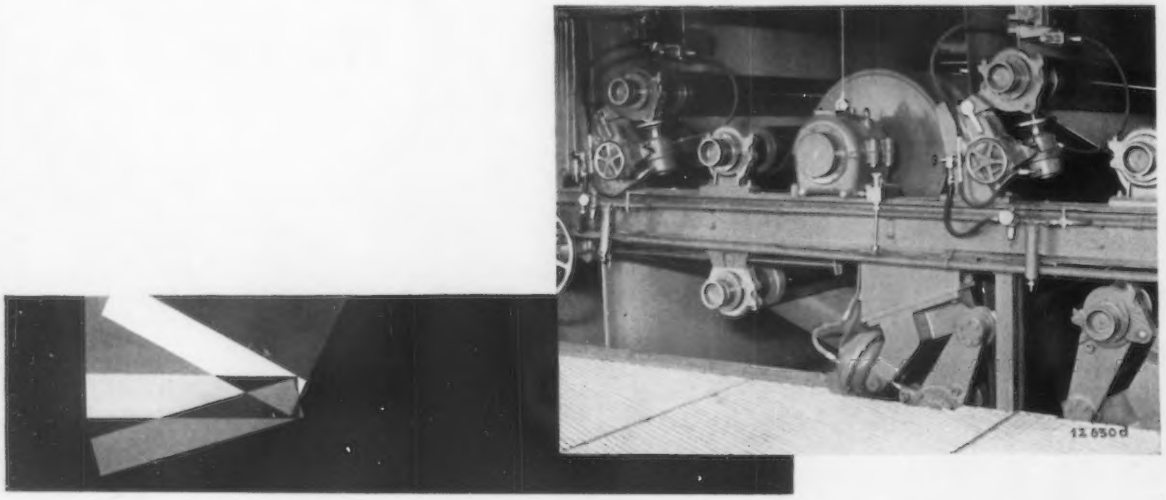
Mr. Langstaff, after receiving a B.S. degree, majoring in chemistry, also spent over ten years serving the paper industry before assuming responsibility for Formex sales this month. He is located at the sales office in Montreal, Quebec.

The Formex Co. developed the first commercially successful all-fabric fourdrinier clothing, and now distributes this new product in Canada, the United States and Overseas.

Representing an investment of over nine million dollars and the culmination of eight years of intensive research efforts, Formex Fabrics are currently manufactured in the United States by the Formex Company, division of Huyck Corp. Shortly, the Canadian Division will complete its new, specially equipped 100,000 square foot production plant in Kentville, N. S., manufacturing fabrics for paper mills in Canada and overseas.

Fawick Airflex Division, Fawick Corp., announces a licensing agreement with Dunlop Rubber Co., Ltd., under which Fawick will manufacture and sell caliper disc clutches and brakes for industrial applications in the United States.

The Fawick agreement brings to



650 VOITH AUTOMATIC FELT GUIDES

have left our works since 1957 – among them as many as abt. 250 as separate units. These production figures are self-explanatory. The VOITH AUTOMATIC FELT GUIDE solves all problems in the control of both wet and dry felts with a maximum of reliability. Its outstanding features are: Unaffected by dirt, water or heat; substantially increased felt life; no re-adjustment required after shutdowns; minimum space required – can be easily mounted in all positions, mostly without any change of the existing felt run. Please write for detailed information.

J. M. VOITH GMBH · HEIDENHEIM (BRENZ) · GERMANY

American industry the performance advantages which have given Dunlop caliper disc units world-wide prominence. These units have been proved in severe braking applications on industrial and automotive equipment.

Designated as Fawick/Dunlop Caliper Disc Clutches and Brakes, they are designed to meet requirements for powerful clutching or braking in modern machinery.

P. A. Peterson

C. J. Peterson

Rice Barton Corp., Worcester, Mass., has appointed Philip A. Peterson sales manager, special products.

Mr. Peterson has been a key figure in sales since joining Rice Barton in 1951 and was recently named chief engineer in charge of trailing blade coaters. He will continue to be responsible for the sales of coating machinery as well as flash-drying plants and all new products.

Carl J. Peterson, who has been specializing in the sales of flash drying plants, has been appointed assistant sales manager.

Mr. Barton stated that the special products department has been created to place more direct emphasis on new and special products and to supplement the field sales effort with more up-to-date technical assistance from the company.

Central National-Gottesman, Ltd., London, England, has appointed Peter G. Zundel to the new post of manager, Paper and Paperboard Division. The opening of the new division in London is described as part of a plan for considerable expansion of sales in the United Kingdom. Well-established in the British pulp and paper market, Gottesman-Central National several years ago organized Central National-Gottesman, Ltd., as its subsidiary at 65 Chancery Lane, London W.C. 2, to provide its own sales service in the U. K. for all grades of pulp. This service is now being enlarged to include paper and paperboard from many outstanding sources of supply.

Mr. Zundel has 14 years of paper marketing experience in the U.K. and is completely familiar with the requirements of British buyers.

for clearer colors at lower cost

PURECAL® O . . . a Wyandotte Key Chemical

PURECAL O produces the whiteness in paper coatings to bring out the brightness in colors. It is the purest of precipitated calcium carbonates, and the whitest coating medium in its price range. It gives paper surfaces excellent finish and printability. Find out how this Wyandotte Key Chemical can help you hold the quality and cut the cost of coating.

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AMERICAN CANCER SOCIETY

Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures

(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	Sept. 2	Sept. 9	Sept. 16	Sept. 23	Sept. 30
1961	89.5r	70.1	94.4r	93.2r	93.5
	Sept. 3	Sept. 10	Sept. 17	Sept. 24	Oct. 1
1960	90.1	73.1	93.2	93.7	95.5

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	96.5	97.7	98.1	96.9	97.6	96.1	81.2	91.7	89.1	94.8	92.0	80.2	92.7
1961	87.9	90.0	91.2	91.2	91.6	91.3	78.0	90.4‡	87.8‡				

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1954	1955	1956	1957	1958	1959	1960	1961
Year to Date	91.4	95.5	98.3	91.1	86.4	92.1	93.9	88.9
Year Average	91.6	96.2	97.9	90.4	87.0	92.0	92.7	

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available.

PAPERBOARD OPERATING RATIOS†—National Paperboard Assn. Figures

COMPARATIVE WEEKLY SUMMARIES

	Sept. 2	Sept. 9	Sept. 16	Sept. 23	Sept. 30
1961	96	76	98	97	98
	Sept. 3	Sept. 10	Sept. 17	Sept. 24	Oct. 1
1960	94	70	93	93	93

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	92	95	94	93	94	92	78	94	88	93	86	73	89
1961	88	89	92	91	92	95	78	95	92†				

† *Per cents of operation based on "inch-hours" reported on a 6-day basis to the National Paperboard Association.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	WEEK ENDING Sept. 23, 1961	WEEK ENDING Sept. 30, 1961	CUMULATIVE TO DATE January 1, 1961 to September 30, 1961
% Activity	97%	98%	90%
Total	350,512	349,991	12,229,487
Containerboard—Domestic Use	192,371	186,633	6,260,792
Liner	131,056	122,923	4,174,266
Corrugating Material	56,279	58,541	1,897,850
Chip & Filler Board	5,036	5,169	188,676
Boxboard—Domestic Use	103,841	104,870	3,707,952
Folding	61,950	62,487	2,218,772
Set-Up	10,586	10,848	360,250
Special Food Board	31,305	31,535	1,128,930
Other Paperboard	54,300	58,488	2,260,743
Containerboard Type	24,688	25,805	1,087,651
Boxboard Type	29,632	32,683	1,173,092
Total Orders			
Received	344,260	365,915	
Unfilled End of Week	557,205	570,722	

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ANGLO-AMERICAN CLAYS CORP.

(Formerly: English China Clays Sales Corporation)

6 East 45th Street, New York 17, N. Y.

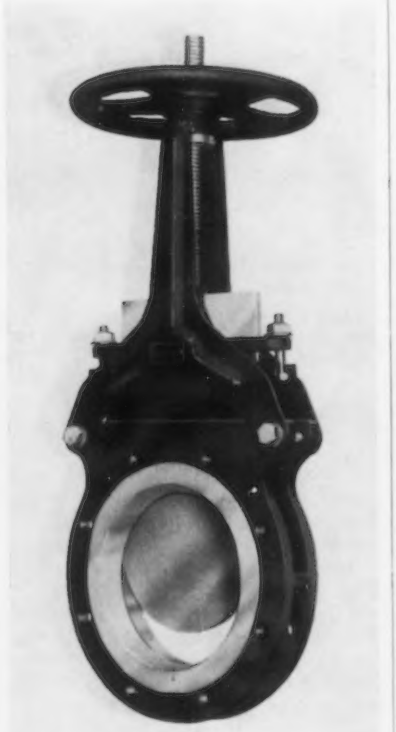
(Continued from page 29)

that swell plastic diaphragms at even ambient temperatures.

According to Lapp, a selection of reagent heads with Kel-F and Teflon diaphragms, and metal diaphragms make Microflo units suitable for pumping almost all hard to handle products. For further information write the Process Equipment Division of Lapp Insulator Co., 127 Hall Street, LeRoy, N. Y.

Flat Seal Gum Offered For Envelope Grades

A front seal gum offered by Morningstar-Paisley, Inc., is claimed to provide the following benefits: (1) elimination of adhesive handling and cleaning costs involved when changing from one grade of paper to an-



KNIFE-GATE VALVE is rubber-seated, bonnetless, and is composed of high alloy only on the wetted parts. Seat consists of a stainless steel ring with a resilient compound, formed to a special shape, bonded to each face in an annular groove. A variety of resilient compounds may be used. A variety of actuators are available. DeZurik Corp., Sartell, Minn.

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boxboard
at lower cost
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PURECAL O is a fine precipitated calcium carbonate specially developed for paper and paperboard coatings. It is exceptionally pure, white, and uniform. It provides more whiteness than any other coating medium in its price range. Find out how this Wyandotte Key Chemical can help you get crisper colors on cartons, at lower cost.
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MICHIGAN ALKALI DIVISION, WYANDOTTE, MICHIGAN

Meet Huyck's

Dave Elliott

Dave Elliott is manager of Huyck's Customer Service Laboratory. After joining Huyck in 1959, he worked for more than a year as Size Control Engineer at our Aliceville, Alabama plant. Since that time, he has received practical experience as a Field Service Engineer and has helped solve many customer problems associated with felt cleaning.

A native of the Deep South, Dave is a Chemical Engineer from the University of Alabama. In his present assignment, he makes good use of this technical training and practical know-how to direct the activities of his group—the largest and best equipped laboratory team in the industry serving papermakers exclusively.

HUYCK FELTS

First in felts since 1870

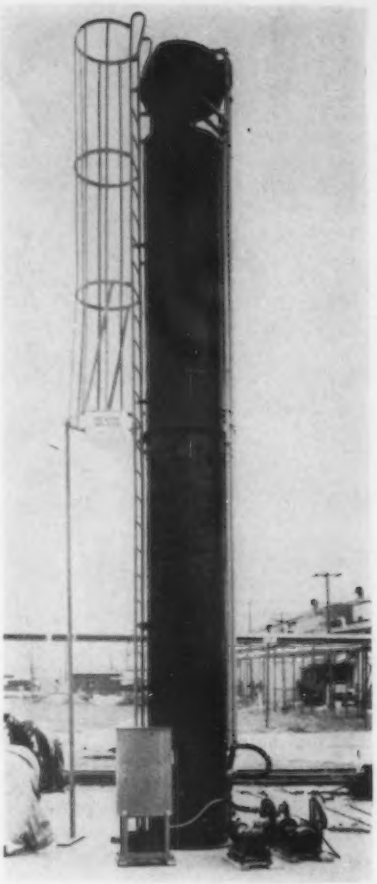
other; (2) reduction in defective seals brought about by variations in paper quality; and (3) a cut in the inventory of gums. Seals are said to be flat and attractive even on light-substance papers.

Flat seal is formulated without solvents and thus does away with the need for ventilation systems. It leaves no seal impression. On envelopes with extended flaps, Flat seal machines without producing curl. This factor eliminates a flap decurling operation.

Flat seal may be used in existing gum boxes on all types of rotary envelope equipment. The gum is clean-machining and performs without difficulty in inserting and metering machines. Drying may be accomplished by low to medium heat. The product is said to have high humidity resistance, and has satisfactorily passed 93 per cent relative humidity tests. Contact: Envelope & Gummed Paper Dept., Morningstar-Paisley, Inc., 1770 Canalport Avenue, Chicago 16, Ill.

Will Furnish Package Pilot Plant For Waste Treatment

A complete pilot plant designed to permit accumulation of waste-treatment and pollution data is now being



produced as a "package" unit by Dow Industrial Service, Cleveland, a division of The Dow Chemical Co.

Approximately 28 feet tall and 3 feet in diameter, the pilot unit makes possible actual analysis of wastes and tests the effectiveness of indicated treatment prior to investment in full-scale equipment. The plant operates on a trickling-filter principle, providing large surface areas to which active biological slimes can adhere to promote oxidation of liquid wastes.

Heart of the structure is Dowpac 20A, a plastic packing material also developed by Dow Industrial Service. Fabricated from saran, Dowpac consists of individual corrugated sheets assembled to form a cubic module for maximum aeration efficiency.

The pilot plant is shipped completely assembled as a tubular steel structure with rotary distributor, pumps, nutrient feeders and other accessories necessary to full operation. Customers must furnish only inlet and effluent piping, plus an eight-foot-square concrete foundation pad. Dow Industrial Service representatives provide instruction in erection and operation.

The unit may be purchased, or may

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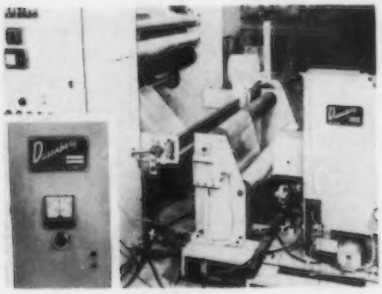
For more information write Dow Corning Corporation, Department 9422, Midland, Michigan

be leased for a basic period of six months with options for monthly rental beyond the contract period. Dow Industrial Service, Division of The Dow Chemical Co., 20575 Center Ridge Road, Cleveland 16, Ohio.

Continuous, Automatic Control of Web Tension

Continuous control of web tension has been reduced to a simple, automatic operation by the Auto-Ten-



sioneer, according to the John Dusenbery Co., which developed the web controller.

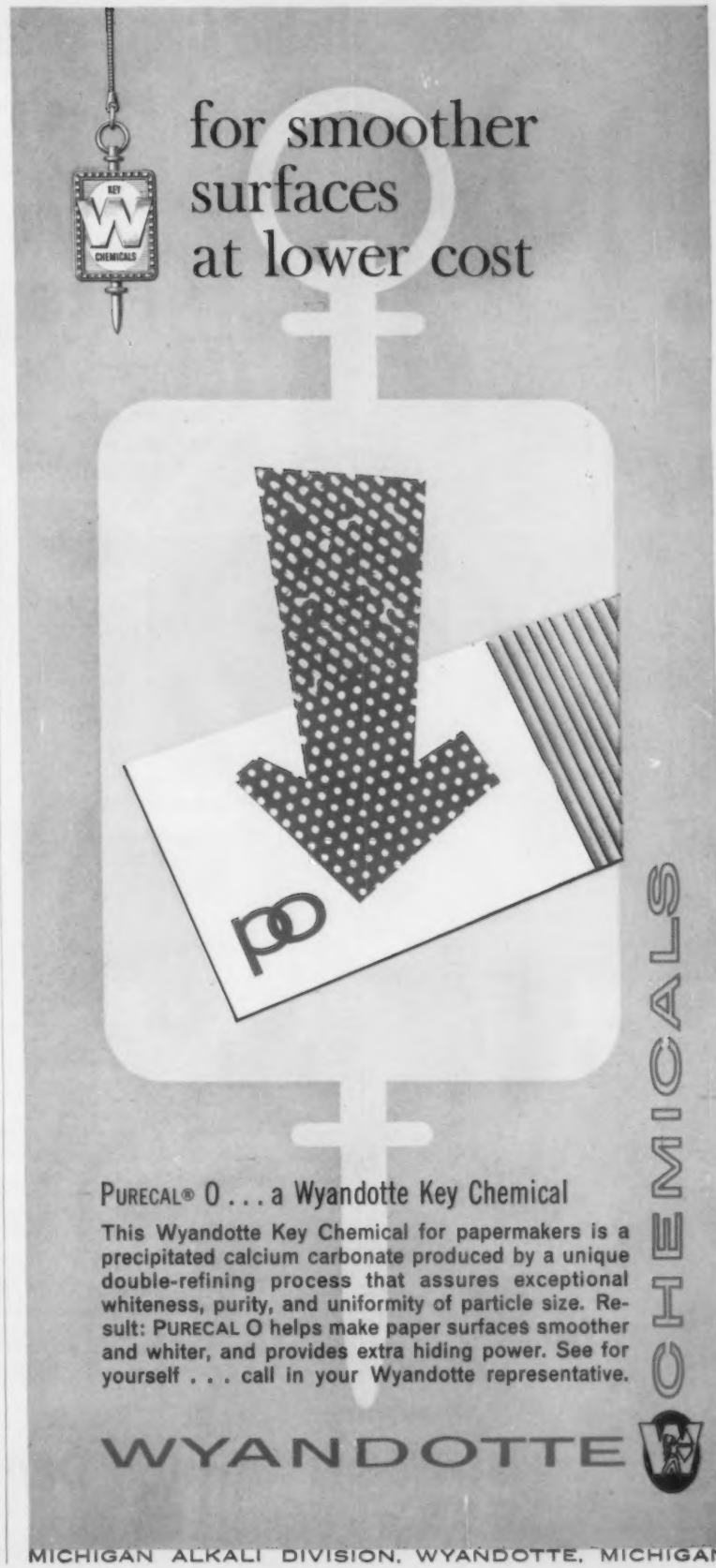
The Auto-Tensioneer can be installed at the unwind, rewind or at any location needed. Either a "dead" or "live" sensing roll may be used. Web tension as measured by the sensing roll is relayed through a pair of load cells to automatic controls. These in turn operate a servo-valve, which adjusts the brake up or down with pneumatic pressure to give the exact web tension wanted. There is only one tension setting to make and an indicator on the control box shows the web tension at all times. An amplifier, lubricator, air ballast tank and strain gauges are among the component parts. A torque motor powers the servo-valve. John Dusenbery Co., Inc., 271 Grove Ave., Verona, N. J.

Destroys Foam With "In-Line" Sonic Energy

A continuous-flow defoaming system using sonic energy has just been introduced by Teknika, Inc. The "in-line" defoaming system incorporates Teknika's Airjet Sonic Defoamers within a resonant chamber. Any quantity of foam entering this chamber is destroyed continuously by sonic energy which works instantly.

Standard Teknika defoaming systems are furnished in a variety of diameters, lengths and foam handling capacities. These systems are available with flanges for installation in all types of pipe-lines, or outlets from the foam-producing units.

Operated by compressed air, steam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This Wyandotte Key Chemical for papermakers is a precipitated calcium carbonate produced by a unique double-refining process that assures exceptional whiteness, purity, and uniformity of particle size. Result: PURECAL O helps make paper surfaces smoother and whiter, and provides extra hiding power. See for yourself . . . call in your Wyandotte representative.
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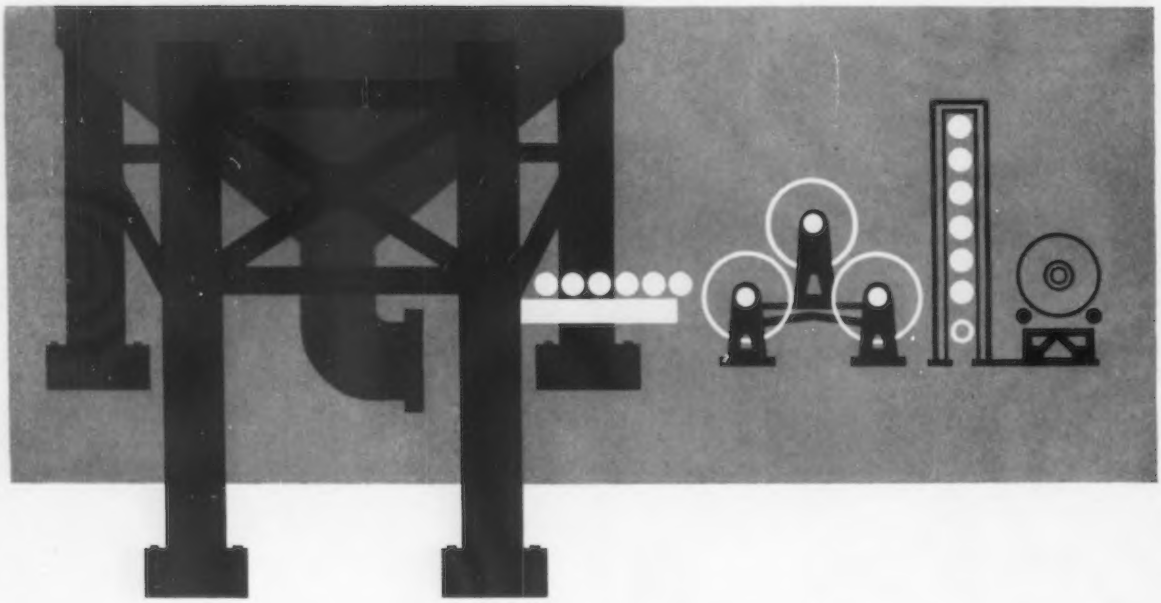

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CENTRAL STEEL & WIRE COMPANY **Chicago, Ill.**—Cincinnati—Detroit—Milwaukee	(AB)
CHICAGO STEEL SERVICE COMPANY **Chicago, Ill.**	(AB)
CLEVELAND TOOL & SUPPLY COMPANY **Cleveland, Ohio**	(B)
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INDUSTRIAL STAINLESS STEELS, INC. **Cambridge, Mass.**—Buffalo, N. Y.	(B)
EARLE M. JORGENSEN COMPANY **Los Angeles, Calif.**—Dallas—Denver—Honolulu—Houston—Oakland—Phoenix—Seattle—Tulsa—Wichita	(AB)
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VIKING STEEL COMPANY **Cleveland, Ohio**	(AB)
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or other gases, and using no electronics or moving parts, the "in-line" Teknika defoaming system does not require chemicals and eliminates foam-settling tanks. Patents are pending on the invention. Literature with details of the system is available from Teknika, Inc., 634 Asylum Avenue, Hartford 5, Conn.

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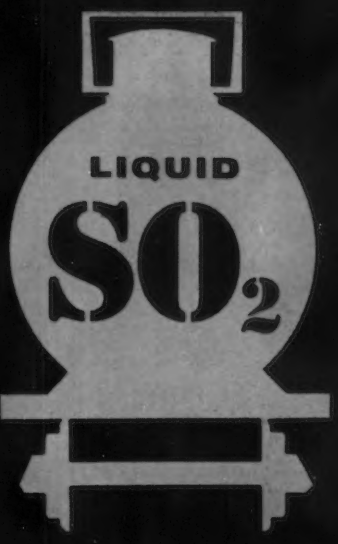

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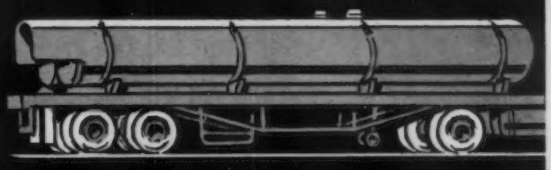

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Mill located in a pleasant community in the East. Salary is commensurate with training and experience. Our employees are advised of this advertisement.

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West Coast fine grade paper company has an opening for a graduate electrical engineer preferably with Pulp and Paper background. The individual selected will be expected to assume complete responsibility for all Electrical maintenance and planning for a Pulp & Paper mill.

Salary open.

Mill located in a city which offers excellent living conditions including good schools, housing and recreational facilities. Close to a large metropolitan city yet far enough to not be effected with big city problems.

Please send complete resume and references in first letter. BOX #61-198 care Paper Trade Journal. 0-23

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Graduate engineers experienced in operations and maintenance for growth positions in an expanding pulp and paper mill located in Western Maryland. Salary commensurate with contribution and excellent opportunity for advancement. Send detailed resume of experience and education in confidence to:

Industrial Relations Manager
West Virginia Pulp and Paper
Fine Papers Division
Luke, Maryland TF

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2—3000# Downingtown 60″ x 67″ roll; like new
2—700# Valley, roll 48″ dia. x 38″ face, tile lined, 50 h.p. motors

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2— 82″ & 86″ Lobdell five roll
1—104″ B-C 8 roll
1—115″ B-C 7 roll
1—124″ Downingtown 5 roll
1—124″ Downingtown 6 roll
1—160″ Lobdell—8 Roll; Hydraulic Loading; motor operated

CENTRIFUGAL SCREENS

3—24″ Shartle Selectifiers, non-contacting type scrapers, monel baskets, air operated valves.

CHIPPERS

1— 96″ Murray 6 knife; A-F Brng.

COATERS

1— 24″ Waldron Coater & Embosser
1— 60″ Egan Air Knife—New 1956
2— 65″ & 76″ Mayers

COMPLETE PAPER & BOARD MACHINES

3—Sandy Hill 81″ trim single cyl. Tissue
1—B-C 100″ 7 cyl. Board Machine Complete
1—M & W 72″ Trim Yankee Fourdrinier
1—Rice Barton 84″ Fourdrinier

CYLINDER MOLDS

1—104″ face x 36″ dia.
6—114″ face x 36″ dia. w/rubber couches
8—124″ face x 36″ dia. w/rubber couches

CYLINDER WET ENDS

1—Single cylinder; 99″ face x 48″ dia.
1—114″ 7 cyl. Wet End, complete
1—124″ 7 cyl. Wet End, complete

DRIVES—ENCLOSED RIGHT ANGLE

17—25-75 h.p.—complete with clutches & cone pulleys
38—1 h.p.-125 h.p. parallel gear boxes

DRYERS—HYDROSTATICALLY TESTED

24″ Dia.:
37— 46″ face; Chrome plated
1—156″ face w/gear and steam joint

28″ Dia.:
3— 70″ face w/gears & bearings
3— 73″ face w/gears & bearings
6— 76″ face w/gears & bearings
4— 84″ face w/accessories

36″ Dia.:
1— 42″ face
2— 44″ face; 2—46″ face
3— 70″ face w/gears & bearings
11— 72″ face w/gears & bearings
1— 74″ face Lukenweld w/A-F Brng.
8— 75″ face w/gears & bearings
26— 76″ face; complete section
9— 76″ face w/gears & bearings
2— 77″ face w/gears & bearings
1— 78″ face w/gears & bearings
2— 80″ face
5— 84″ face
9— 84″ face; complete section
7— 92″ face; complete section
1— 96″ face
1—138″ face
10—160″ face

42″ Dia.:
23— 73; 74; 76″ face; complete section
24— 96″ face w/gears, frames & bearings
1—120″ face
1—160″ face

48″ Dia.:
39— 46″ face; nickel plated
12— 82″ face; complete section
3— 84″ face
7— 94″ face
1— 96″ face
12— 98″ face—complete section
19—106″ face w/gears & bearings
6—110″ face w/gears & bearings
10—123″ face w/gears, frames & bearings
1—128″ face
22—164″ face w/gears & bearings

EMBOSSERS

1— 80″ Hudson Sharp; A-F Brng.
2— 62″ Textile Machinery Co., w/drives

EXTRACTORS ROLLS—DOWNINGTOWN

1—128″ face x 24″ dia.—complete section

FELT CONDITIONERS—VICKERY

1—New Bird—218″ Max. cleaning area

FLAT SCREENS

1— 12 plate IMPCO w/Dunbar Drives
8— 14 plate IMPCO—Bronze Vats S.S. Plates
294 S.S. plates—.014 cut to .020 cut

FOURDRINIER SECTIONS

1—Beloit Yankee Fourdrinier section—wire 132″ x 47 ft. 4″. Oper. 870 f.p.m. 132″ x 10 ft. Yankee Dryer also available.

INLETS & HEADBOXES

1—131″ Valley w/10″ distributing roll; SS lined

JORDANS

1—Horne w/A-F Brngs.
1—Shartle Miami #2 w/A-F Brngs.
1—E. D. Jones #4 Imperial A.F. Brng.

LAYBOYS

1—Hamblet 124″—gear motor operated
1—Hamblet 88″—gear motor operated
1—Beck 65″ w/auto lowering device

MOTORS 3 PH 60 CYCLE

1—100 h.p. GE; 440 v; 695 r.p.m.
1—300 h.p. West; 2200 v; 503 r.p.m.
1—350 h.p. GE; 2200 v; 720 r.p.m.; Synch.

PAPER MACHINE DRIVES

1—De Laval 100 h.p. steam turbine w/reducers

PULP MILL EQUIPMENT

1—Lannoye #1 Pulper
1—Murray 2 deck Chip Screen, 5 ft. x 14 ft.

PUMPS—OPEN IMPELLER

47—Centrifugal Stock and Water Pumps
1—Shartle 8 x 18 Duplex

REELS

1—100″ Kohler automatic two arm unwind reel; 60″ dia. rolls; new condition
1—109″ two bowl upright
1—123″ Beloit—2 bowl
1—126″ Beloit Aldrich surface drive type
1—146″ B & S pope type w/Reliance drive

REFINERS

2—#1 Claffin; A-F Brng.
3—#6 Morden Stock Makers—Model HA
1—24″ Downingtown Weiner; new
2—36″ Bauer, Model 185 w/2—75 h.p. motors
2—36″ Bauer, Model 185 with 2 100 h.p. motors
2—36″ Bauer, Model 185 with two 150 h.p. motors— SS Construction
1—36″ Bauer, Model 185 with two 100 h.p. motors— SS Construction
3—Dilts #4 Hydrafiner—AF Brng.
1—Dilts 36″ Classifiners AF Brng.
2—#4 Shartle Cyclifiner AF Brng.
1—48″ Sutherland—S.S. Discs
2—42″ Sutherland—S.S. Discs

ROLLS

483—R. C. Couch rolls, S.S. distributor rolls; chilled iron calender rolls, breast rolls, press rolls, felt rolls. Forward your requirements.

ROLL GRINDERS

1—124 x 30″ Farrel w/crowning device
1—208″ x 32″ Farrel w/crowning device

ROTARY SCREENS

5—Bird #3A, Model 100 w/copper vats
1—Jones Leithwalk copper lined

SHEETERS—ROTARY KNIFE

1— 55″ Beck w/Jogger
5— 56″, 66″ & 70″ Hamblets
1— 65″ Kidder w/elec. eye and Layboy
3— 72″ Hamblet w/M&W Layboy
1— 76″ Beloit Duplex
1— 82″ Hamblet
2— 82″ Hamblet w/overlapping M&W Layboy
1— 85″ Hamblet Duplex w/Layboy
1—105″ Hamblet
1—112″ Beloit Duplex Board Cutter; A-F Brng.
1—134″ Hamblet Duplex w/Layboy

SLITTERS & REWINDERS

17¾″ Maximum Rewind Diameter
1— 26″ Cameron Type 24
2— 42 Cameron Type 26-2A

24″ Maximum Rewind Diameter
2— 42″ Cameron Type 6
1— 42″ Cameron Type 6 Shear Cut
2— 62″ Cameron Type 6

30″ Maximum Rewind Diameter
1— 52″ Cameron Type 10; A-F Brng.

36″ Maximum Rewind Diameter
1— 82″ Cameron—Model 10-10

42″ Maximum Rewind Diameter
1— 82″ Johnstone, Model 16; A-F Brng.
1—136″ Cameron Type 18; A-F Brng.
1—161″ Cameron Type 18 w/60 h.p. Reliance VS Drive

48″ Maximum Rewind Diameter
1— 86″ M & W Four Drum Shear Cut
1—152″ Langston Shear Cut

60″ Maximum Rewind Diameter
1—112″ Cameron Type 18
1—120″ M & W two drum w/75 h.p. drive
1—120″ Langston
1—136″ Langston; AF Brng; shear cut

SLITTERS & REWINDERS—DOUBLE REWIND

18″ Maximum Rewind Diameter
1— 56″ Cameron, Model 26-7; Razor blades

30″ Maximum Rewind Diameter
1— 42″ Essex Shear Cut; A-F Brng.

STOCK CLEANERS

2—1000 g.p.m. Shartle Hydrafuges w/motors
14—Bird Dirtees; 2″ & 6″ bronze
1—Bird Dirtec 12″. Rebuilt by Bird
9—4″ Vortraps—Bronze

STOCK REGULATORS

2—Poirier; 25T/D cap

SUCTION COUCH ROLLS

1—125″ face x 18″ dia.—bronze brng.
1—144″ face x 30″ dia.—roller brng.

SUCTION EXTRACTOR ROLLS—DOWNINGTOWN

1—126″ face x 22″ dia; complete section
1—134″ face x 18″ dia; A-F Brng.

SUCTION PRESS SECTIONS

1—114″ face x 20¼″ dia. R. C. Complete section
1—120″ face x 18″ dia.—R. C.—Roller brng.
1—124″ face x 18″ dia. Downingtown; A-F Brng.
1—126″ face x 24″ dia. R. C.; A-F Brngs.

SUPERCALENDERS

2—30″ Norwood 4 roll
1—53″ Norwood, 13 roll, glassine; A-F Brngs.
1—65″ Norwood 8 roll; A-F Brng.
1—92″ Norwood 7 roll w/ drive

TOWEL FOLDERS

1—Paper Converting single fold—towel

THICKENERS

1—Shartle—Cylinder 131″ x 36″—16″ Couch
1—Shartle—Cylinder 36″ dia. x 72″ face

TRIMMERS—POWER BACK GAUGES

1—50″ Seybold Twentieth Century
1—65″ Seybold Dayton
2—84″ Seybold Daytons
1—Challenge 34″ w/motor

UNWIND STANDS—CONSTANT TENSION

1—34″ Cameron Type CT—Electric Eye
1—72″ Cameron—w/c brake—air operated
1—82″ Cameron—w/c brake—air operated

VACUUM PUMPS

8—H-4, ½H-5, & H-5 Nash
2—L-5 & L-7 Nash
5—#2, #4, & #7 Nash Hytors
1—8 x 10 Connersville
2—Nash H-7
1—Nash K-6
1—Nash K-3

WET MACHINE

1—74″ face x 48″ dia. mold—complete machine

YANKEE DRYERS

1—132″ face x 10′ dia. Beloit; 35 psi

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ENGINEERING OPPORTUNITIES

We are a fast-growing paper manufacturer located in northeastern Wisconsin. Our engineers handle interesting work with a lot of variety and plenty of opportunity to use their own discretion and judgment. Because of our rapid growth, we do not have time to increase our engineering staff by hiring new graduates and training them. We are interested in recent graduates but we also want to find experienced men who can produce quickly. If you are an ambitious engineer in either category and want to get ahead faster and farther than your present job permits, this may be just the opening you are looking for. We need qualified men in the following fields:

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CHEMICAL ENGINEERS
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O-16

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West Coast fine grade paper company has an opening for an experienced chemist to work in their Technical Department.

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O-23

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N-6

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Position requires degree in chemistry, chemical engineering, or paper technology, and some technical or quality control experience in paper production. Work involves development and evaluation of paper and board for combination with aluminum foil, providing technical assistance to sales and plants on paper problems.

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Sanitary Paper Mills, Inc.
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Telephone Jackson 8-2158

O-23

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For newsprint mill outside U.S.A.—Must be well experienced and capable of training men.—Must be willing to work long—hard hours for good salary.—Reply with full resume, giving references and marital status and number of children to Box 61-195 Paper Trade Journal, 49 West 45th St., New York 36, N. Y.

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D-4

Situations Wanted

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Age 44, has 24 years experience in pulp, insulating board & hardboard mills. Experienced in the pulping of agricultural wastes and pulpwood. 10 years as top executive, experienced in all phases from research, production thru to sales. Desired challenging opportunity with small or large company. Willing to relocate. Address Box 61-201 Paper Trade Journal.

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MANUFACTURERS' REPRESENTATIVE

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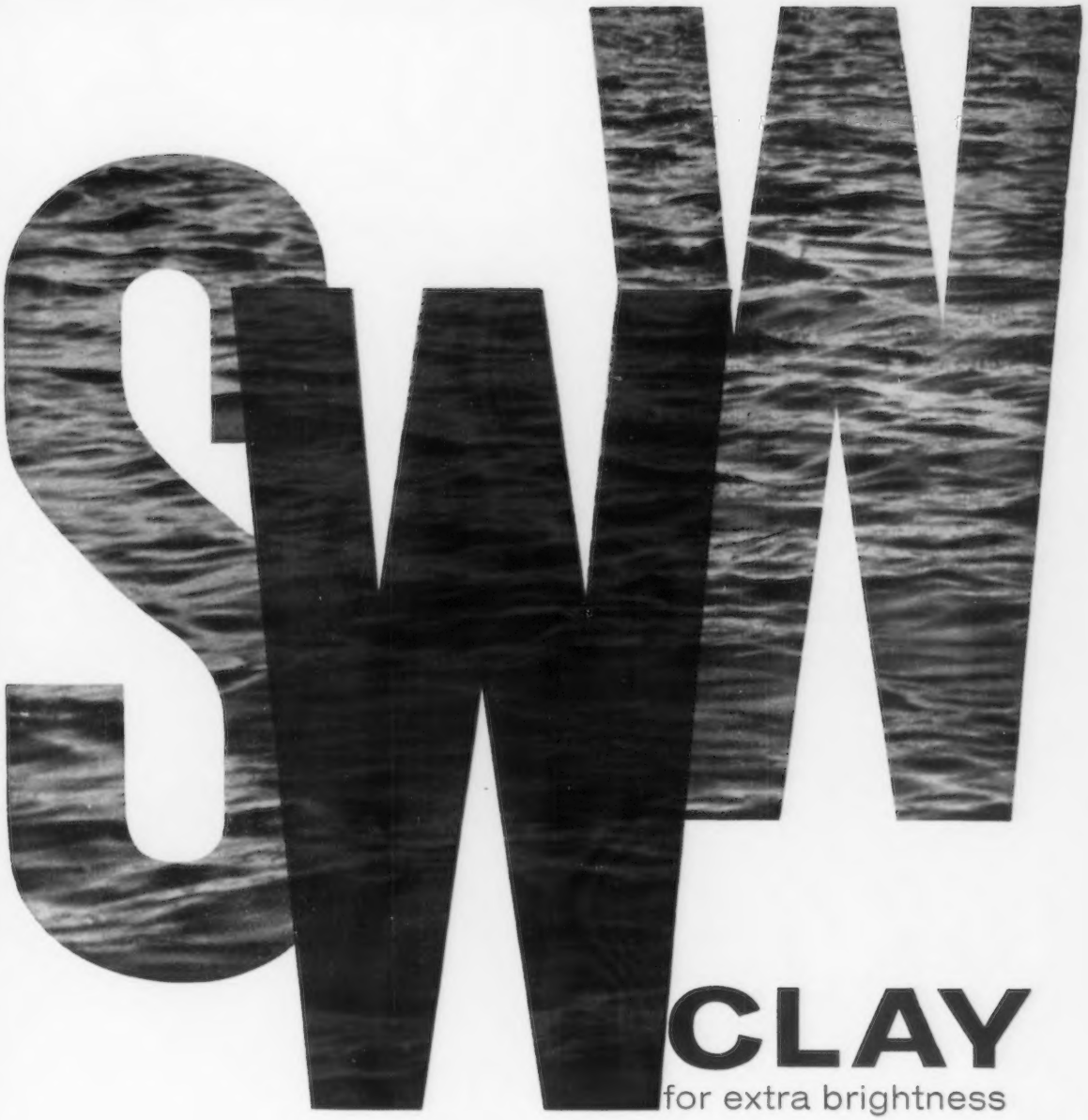

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DICALITE®

TECHNICAL REPORT

DICALITE DEPARTMENT • GREAT LAKES CARBON CORPORATION • 612 SO. FLOWER ST., LOS ANGELES 17, CALIFORNIA

New Dicalite BULK-AID for Paper Products

TRADEMARK

Dicalite BULK-AID is a new development in inorganic fillers, with particle size range and distribution carefully controlled to give maximum bulking characteristics in paperboard and paper products. BULK-AID has the lowest apparent or bulk density of any known mineral filler for papermaking use, thus providing required caliper at lower weights. One example is that of a 40-point groundwood sheet whose weight was reduced from 29.2 lbs/ft^3 to 27.3 lbs/ft^3 by the addition of 10% BULK-AID.

The light weight and bulking characteristics of BULK-AID make it especially suitable for use in paperboard; its high brightness and excellent retention are also of considerable value. BULK-AID lowers the furnish cost and increases pulp mileage in top liners for patent white paperboards. Its brightness and opacity raise the quality of underliners at the same time it extends the furnish.

Dicalite BULK-AID is an amorphous mineral, technically an aluminum silicate, produced from a volcanic mineral known as perlite by a special process developed by Great Lakes Carbon Corporation. BULK-AID is inert, insoluble in water, acid or mild alkalies. It is grit-free, and exhibits no reaction with alum in sizing or with other papermaking chemicals. It is readily dispersed in any furnish, does not cause foam, and will not fill felts.

Among BULK-AID's physical characteristics are these:

Color: White

Average G.E. Brightness: 83

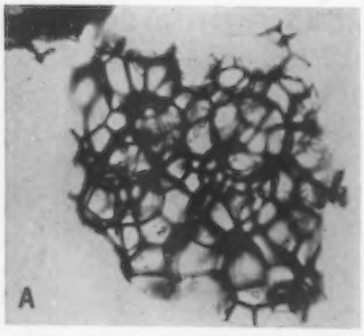
Loose weight: 4½ lbs/ft^3 average

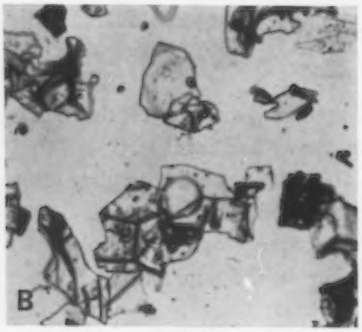
Bulk densities in paperboard: 15 lbs/ft^3 average.

Particle size: 80% less than 10 microns

Extensive testing has shown BULK-AID to be successful in actual paper mill production. Most of these tests were on cylinder machines for paperboard production, but limited tests indicate its value in many slow speed fourdrinier applications.

Your Dicalite engineer will be glad to discuss BULK-AID with you and to advise on possible product applications in your own plant.





When perlite is crushed and then suddenly heated to the proper point in its softening range, it pops like corn into particles like that shown in photomicrograph A, containing a myriad of microscopic sealed cells. The size of the original particle and the application of heat are both important, and are critically controlled. This is the expanded material from which BULK-AID is produced. Controlled milling and air classification by an exclusive Great Lakes Carbon Process are the major steps in making BULK-AID, typical particles of which are shown in photomicrograph B.

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Gordon G. Halvorsen

DICALITE'S "MAN ON THE SPOT"

The development of Bulk-Aid, to meet the industry's need for an extremely low density bulking agent, was initiated by Gordon Halvorsen, Product Sales Manager for Dicalite, and he has been closely identified with its tests and product application work from the beginning.

Halvorsen has an extensive background in research and development work, beginning with his graduation from the University of Minnesota with a degree in Chemical Engineering. Prior to joining Great Lakes Carbon in 1940, Gordon had been engaged in technical and laboratory work in the pharmaceutical, corn processing and water treatment fields, and continued his research work in the Dicalite product laboratories for the first 5 years of his association.

Halvorsen is the author of several technical papers, and has contributed to both paper industry and brewing publications. Among his technical society memberships he lists TAPPI, American Society of Sugar Beet Technologists, Master Brewers Association of America, and others in the brewing and drycleaning fields.

NEW DATA SHEET

on Dicalite *BULK-AID* gives more complete information on physical and chemical properties, and on its advantages in papermaking. Write for your copy to Dicalite Dept., 612 So. Flower St., Los Angeles 17, Calif.